THE IRON AGE

THURSDAY, JULY 4, 1889.

Effects of the German Beam Combination.

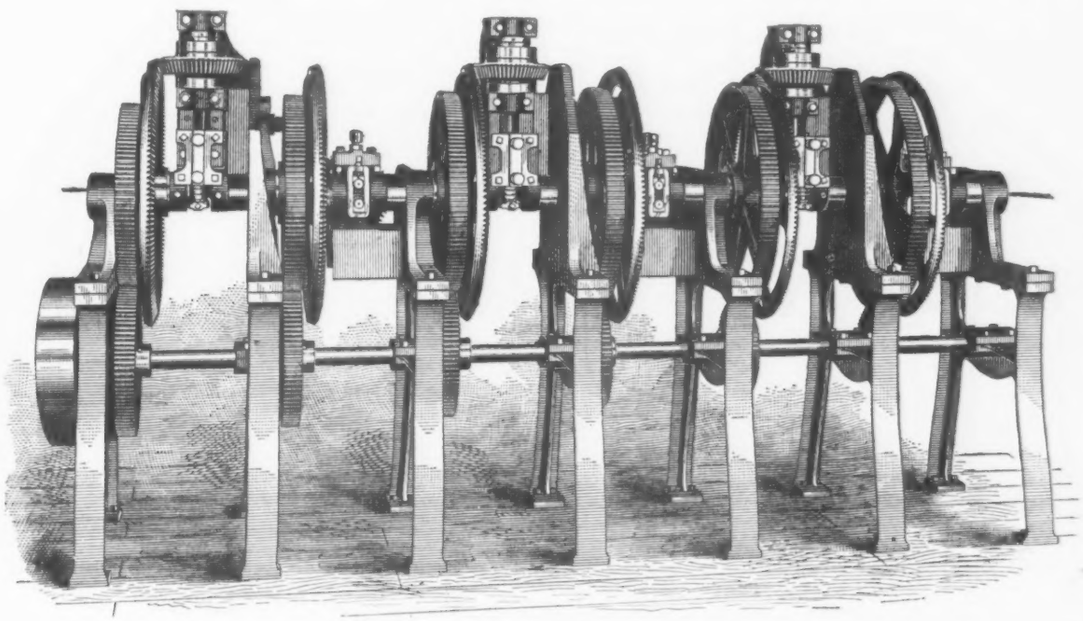
The facts given in the following article are derived from a recent issue of *Kuhlow's:*

"Following the Rheinische Stahlwerke, which commenced the manufacture of beams a few months ago, the Eisen und Stahlwerke Hoesch, Dortmund, has now taken up this article. While owing to the influence of the firm of Gebr. Roechling, which belongs to the beam combination, through its works at Völkingen, the Rheinische Stahlwerke were induced to join immediately, the Eisen und Stahlwerke Hoesch has meanwhile stood aloof from the combination, and is offering its new production below the combination price, in order to become acquainted with the buyers. Although the production of the new works is at present too small to exercise a depressing effect on the prices this season, the case may be otherwise at the beginning of autumn, when building operations commence to diminish.

"Besides the above-mentioned works, other beam-works are projected or in course of erection, among which may be named the works laid down at Dortmund by Gebr. Roechling, of Völkingen, though in this case they may only be considered as a substitute for the iron-beam works already in operation; also those of the Eisenhütten Verein Düdelingen (Luxembourg) and those of the Actien-Gesellschaft Peiner Walzwerk, Peine (Brunswick). The last-named works especially, in consequence of the cheap Ilfeder pig-iron which is particularly adapted for the manufacture of beams, will be in a position to compete in a very appreciable manner with the works in Westphalia and the Lower Rhine (Dortmunder Union, Hoesch, Gutehoffnungshütte, Rheinische Stahlwerke and Aachener Hütten Actien Verein), so far as concerns the market in Central and North Germany. In view of the varying cost of production in the different works it is hardly probable that the combination would hold out should an overproduction in this article take place. In the Saar works, the cost in which is unusually low, it is seen that a great mistake has been made in forming the combination. The high combination prices have been the means of calling into existence new works."

Wire-Rolling Machine.

The machine for rolling wire cold which we herewith illustrate is the direct outgrowth of machines for rolling taper shapes invented by H. A. Williams some few years since. In those machines the wire to be reduced or tapered was subjected to the action of rolls grooved to conform to the taper desired. The wire was brought between the rolls several times, and each time was reduced in diameter and correspondingly lengthened until it acquired the desired shape. The form of the grooves in the rolls governed the shape, in section, of the wire, which was cylindrical, oval, diamond, &c. It was found that steel wire reduced by this process was softened and strengthened. The reduced or point part of a steel crochet-needle could be knotted, twisted and hammered in a way the metal would not stand in its original condition.



THE WILLIAMS WIRE-ROLLING MACHINE.

The machine we illustrate consists of a series of rolls, each roll being formed with a groove similar to the half-section of the desired form; in the roll shown the section is circular. The rolls are arranged at different angles about a common axis in which a guideway, consisting of hollow steel tubes, is provided so that the grooves forming the passes of the rolls coincide with the guideway. The rolls are adjustable in a circle around the guideway for varying the angles of the different pairs relatively to each other. The rolls are mounted in housings supported on bed-plates pivoted at one end in the axis of the guideway and otherwise supported by clamp-bolts, by which they are clamped through a flange to a face-plate of the main frame in which there is a curved slot, allowing the roll-supporting beds to be shifted to obtain the circumferential adjustment. The rolls of each pair are geared together by toothed wheels in the usual way, and one roll is coupled with a driving-shaft carried in bearings on the bed-plate and geared by a bevel-wheel with a large compound bevel and spur driver which revolves around the guideway and is geared with the main driving-shaft by a smaller spur-wheel. All the rolls are similarly geared to this shaft, with suitable variations in sizes of the wheels to increase the speed of the rolls successively as the speed of the wire increases by elongation.

In consequence of the great difficulty of practically varying the speeds of the rolls in the same measure as the movements of the wire vary by elongation and so that the loops of slack between the pairs of rolls in the one case and the overtension in the other case may be avoided, a friction device is arranged so that the rolls will compensate for this.

One of the principal difficulties of making round wire in the continuous rolling process with rolls successfully located in different angles consists in the local wear in the grooves made by the fins produced in the preceding rolls, which, if confined to one locality of the grooves, soon wear them thereat more than in the rest of the grooves, owing to the greater labor of reducing the metal at the fins than elsewhere. It is to shift the rolls about to change the localities of the excessive wear by the fins, so as to distribute the same over the surfaces of the grooves, that the roll-beds are arranged for circumferential adjustment.

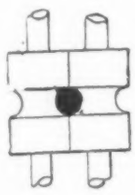
Either small bright round, square, hexagon or octagon may be rolled in this machine by adapting the grooves in the rolls to the required form. The effects produced on the metal are advantageous. It makes a closer-grained and softer metal, and increases the tensile strength, in the case of steel, nearly 100 per cent. Drawing a pipe of one metal containing a bar of another metal the ratio of diameters is always maintained, showing that the roll-

ing affects the metal from center to circumference. A broken piece of Bessemer steel wire before being rolled showed a coarse grain, but after rolling the grain throughout was extremely fine. There is no surface scale as in drawing. A test of soft annealed Bessemer steel wire No. 5 showed a tensile strength of 56,460 pounds per square inch before rolling, and a strength of 105,800 pounds per square inch after having been reduced to No. 10. The same gain is found in steel, iron, brass and German silver. The machine has rolled all the metals mentioned in three passes from $\frac{3}{8}$ to $\frac{1}{16}$ inch, and without intermediate annealing. The machine we illustrate has six pairs of rolls. The hardest kind of drawn brass has been rolled down without trouble.

These machines are made by the Williams Wire Rolling Machine Company, of Taunton, Mass.

The Princeton Scientific Graduates.

At the one hundred and forty-second commencement of Princeton College, June 15–19, the following theses were read by members of the graduating class in the scientific department: Charles J. Montgomery, of Augusta, Ga., on "Determination of Phosphorus in Pig-Iron;" George K. Edwards, Washington, D C., "The Digestive Tract of the House-Fly;" William R. Bonsal, Baltimore, Md., "Review of the Roof of the Freight-House of the Baltimore Storage and Lighterage Company;" Henry D. Sill, Cooperstown, N. Y., "Histology of the Stomach;" Cyrus L. Pershing, Pottsville, Pa., "Comparative Anatomy of the Heart and Aortic Arches;" Isaac Nakagawa, of Tokio, Japan, on "Comparison of the Structure of the Cortex of the Cerebrum and Optic Lobes in the Vertebrate Classes;" Theodore G. Gordon, Ohio, on "Determination of Phosphorus in Pig-Iron;" William D.

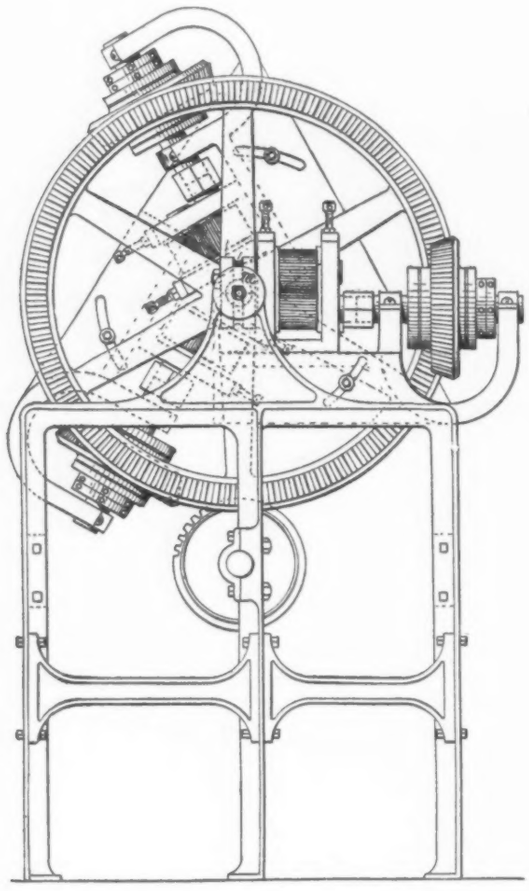


The Roll.

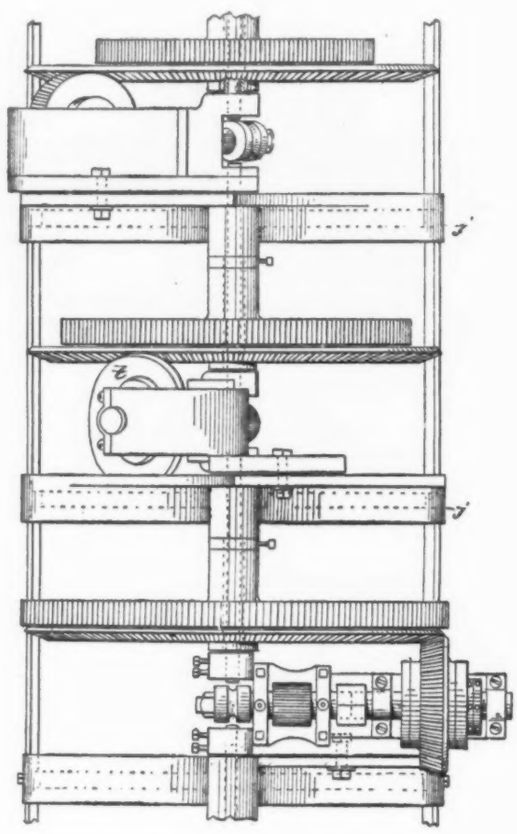
Bratton, Maryland, "Review of the Iron Highway Bridge on the Road from Princeton to Gray's Mills;" Joseph C. Morris, Jr., Louisiana, "Design for a Wrought-Iron Highway Bridge at Princeton Basin;" Byron S. Clark, New York, "Raoult's Law for Determination of Molecular Weights;" Henry R. Pemberton, Virginia, "Localization of the Sight-Center in the Occipital Lobe of the Brain;" Alonzo E. Conover, Jr., New York, "Determination of Phosphorus in Pig-Iron;" George L. Hall, Pennsylvania, "Review of the Roof of the Hammer-Shop of the Pencoyd Iron Works;" Thomas W. Hotchkiss, Jr., New York, "Magnetic Constants;" Wm. B. Mount, Pennsylvania, "Brain and Cranial Nerves of the Salamander;" Thomas C. Noyes, District of Columbia, "Separation of Zinc from Nickel;" John E. Shrady, New York, "Nervous System of 'Nereis Virens.'"

The use of burnt clay ballast is rapidly increasing among the railroads of the West. The Chicago, Burlington and Quincy Railroad have a large amount in use on their lines in Iowa, and their officers are said to prefer it to gravel or broken stone. The Iowa Clay Ballast Company, of Kansas City, have a large contract on the Burlington and have done a good deal on the Rock Island road. They furnish the ballast to the Burlington company burnt and loaded, the company furnishing the coal and transportation for 50 cents a yard, and the total cost when under the track, everything included, is figured at 94¼ cents per yard, compared with about $1.25 per yard for stone ballast. On the Rock Island road the cost is figured at about 63 cents per yard, burnt and loaded.

India has now 16,000 miles of railroad. It is as far from Calcutta to Bombay as it is from New York to Denver, and several trunk lines run across Hindostan from one city to the other. There are branches from these which go up the Himalaya Mountains almost to the borders of Thibet, and others which shoot off to the Khyber Pass at the entrance to Afghanistan and not a great distance from the new Russian railway, which has been pushed on past Samarcand. The construction of these railroads has included engineering works fully as grand as the railroad-making of the United States, and the keeping of them in order is more difficult.



End Elevation.



Plan.

THE WILLIAMS WIRE-ROLLING MACHINE.

Bolt-Cutter, Nut-Tapper and Pipe-Threader.

This machine was designed by the Wiley & Russell Mfg. Company, of Greenfield, Mass., in answer to a long demand they have had for a machine having "opening dies;" to meet the requirements it should be simple in construction, easily operated and adapted to large and small work. The dies are made in two pieces, with two cutting edges each, and are placed in two revolving disks, half in each, which are drawn together and thrown open by right and left hand screws, and which are adjusted independently by adjustable stop-pins at each die. As the dies are in the outer rims of the disks, any size may be instantly brought into line and the ten sizes may be cut almost as quickly as ten bolts of one size. The disks are made up with various assortments from ¼ to 2 inch for both bolts and pipe. For accurately cutting difficult work, such as long, coarse or square-shaped screws for chains, presses, vises, &c., a leading screw and gears are provided. The head-stock has back gears like an engine-lathe, and gives eight changes of speed. The chuck is composed of two sets of double round cast-steel plates, having three diamonds of different sizes planed in the circumference and revolving on steel studs and being centered by stop-pins. The size of the diamond is further regulated by right and left hand screw. The machine is supplied with an attachment for cutting off bolts and pipe, and has an extra scroll-chuck on the back of the spindle for holding the work firmly. The weight of the machine is about 700 pounds. Fig. 1 represents the plain machine, while Fig. 2 is provided with leading screw, gears, cutting-off attachments and extra chuck.

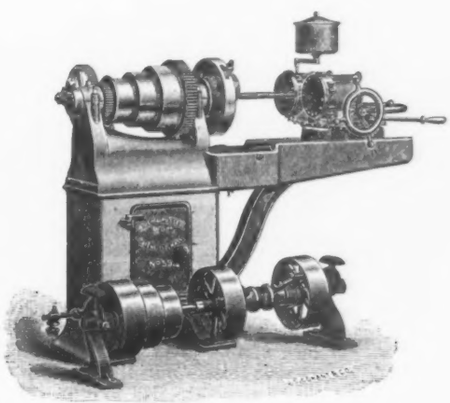


Fig. 1.

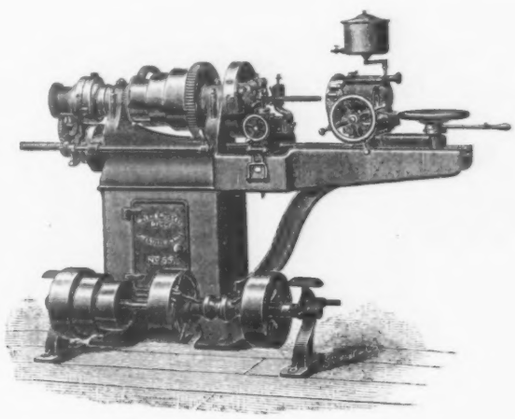


Fig. 2.

BOLT-CUTTER, NUT-TAPPER, PIPE-THREADER AND CUTTING-OFF MACHINE WITH OPENING DIES.

Railway Wheels and Rails.

Four years ago the American Society of Civil Engineers adopted the following resolution:

Whereas, The relation which the form of the head of a rail should bear to the section of a car-wheel tread and flange has recently been in dispute, it being asserted on the one hand that they should have as long a line of contact as possible, and on the other hand that such long contact would be dangerous and injurious; and

Whereas, The question raised by this diversity of view is of direct importance to the many members of this society, as well as to the public interest, and hence is one which this society may appropriately consider through committee; therefore be it

Resolved, That a committee of five members of this society be appointed by the president to consider and report to the society on the proper relation to each other of the sections of rails and wheels; to what extent and at what points it is expedient that their sections should be such as to bring them normally in contact, and to what extent and at what points it is not expedient that they should be so in contact; and that the committee be instructed to seek information from all those who are known to have given the subject attention.

This committee, composed of H. Stanley Goodwin, A. M. Wellington, Samuel Rea, George S. Morison, Thomas Rodd, S. M. Felton, Jr., and James Archibald, have just presented their final "Report on the Proper Relation to Each Other of the Sections of Railway Wheels and Rails," from which we take the following abstracts:

Your committee, to whom were referred the questions covered by the subjoined resolution, has satisfaction in reporting that since the appearance of its preliminary report it has discovered by circulars of inquiry that a fair approach to unanimity of sentiment exists among engineers in regard to the questions involved.

A copy of that report was sent to all members of the society and to about 250 others, railway officers and engineers not members of the society, including all those known to the committee as having shown interest in the subject in any way. Circulars of inquiry asking certain specific questions were sent out in the same manner to all persons in and out of the society, some 500 in all, known or thought to be interested in the question. The responses have been numerous and valuable. Sixty-four responses, many of them very elaborate and complete, have been received from engineers, mechanical officers, rail makers and others, including a large majority of those whose views the committee were most anxious to obtain. All the Eastern trunk lines and numerous other great systems are represented in these responses or on this committee. The discussions will make a large pamphlet, and they are accompanied by many drawings. It was impossible to do more than tabulate the specific responses without unduly delaying this report, but the discussions constitute such a valuable collection of practical information as to rails and wheels that your committee recommend their publication in full.

Your committee were surprised as well as gratified to find that, instead of developing the diversity of opinion which is the frequent result of such inquiries, and which is the condition of present practice as to rail sections made especially probable, the responses show throughout the degree of agreement as to essentials above noted, amounting almost to unanimity in respect to the specific questions submitted; those, namely, concerning the form and general proportions of the head of rails. This result has greatly encouraged your committee in unanimously recommending, as they now do, the following details as standard for practice:

12-INCH TOP RADIUS.

First.—Your committee recommend a 12-inch top radius as a standard for rail section of all weights.

The answers received upon this point show that a 12-inch radius was favored by 44, while only 8 favored a flat top.

The prevailing sentiment, which your committee share, appears to be that the end sought in the suggestion of an entirely flat top between the rounded corners, viz., a wider bearing for the wheel-tread, is a desirable one; but that it is and will be better secured in practice by using a slight curve for the top of the section, instead of a straight line. The evidence is that an entirely flat top is difficult, if not impossible, to roll properly; trials have resulted badly. Inevitable irregularities of track and the usual slight bends in the web, due to the rails lying on their sides when hot, would throw the bearing of the wheel-tread on one or the other corner instead of evenly across the top, causing early flowage and rounding of section. The standard wheel-tread is now slightly coned, a perfectly cylindrical tread having been first rejected. While few hold that the coning has a sensible influence on curve resistance, the belief is general that coning does have a sensible steadying effect to diminish oscillation, and it is questionable if it would be wise to wholly dispense with it. Were the tread originally perfectly cylindrical, with an even bearing for the whole width of rail-head, the necessary gauge-play alone would tend to wear it hollow. Under existing conditions wheel-treads wear slightly hollow, corresponding to about a 12-inch radius, very early in their lives. As a consequence, nearly all rails now wear down to a curved top on the outside as well as the inside of the head. Were flat rails and cylindrical wheels universal on any one line, and were they thus made free from all tendency to wear to a curve, the constant interchange of cars would bring hollow treads on flat rails and straight treads on round-top rails. With the top curve the load is sustained centrally and transmitted directly downward through the web. Without it, one or the other corner will sustain the load in practice, and neither long in succession, causing a tendency to split off the side of the head if the metal be in any way defective.

Most wheels being worn slightly hollow, the bearing is in practice now tolerably wide. For these and other reasons your committee are entirely clear that the attempt to introduce a perfectly flat top is inexpedient.

BROAD HEAD RELATIVELY.

Second.—Your committee recommend a broad head relatively to depth for sections of all weights, taking care not to go too far in either dimension, especially in very large or very small sections, or to endanger the flange cutting into the joint. This proportion was favored almost unanimously in the replies.

Your committee are much impressed with the weight of evidence and opinion tending to show that in the effort to secure three ends in themselves desirable and proper, too little attention has been paid to metallurgical laws and processes of manufacture in designing rail sections. The tendency has been strong—

A.—To secure a broad bearing on the tie by widening the base. At the same time

B.—To save metal by making the base thinner, and also the web; while

C.—To increase tonnage life, additional metal has been placed on the top of the rail head.

These ends, as stated, are in themselves good but the result of seeking to attain them in this way is a great disproportion of mass in the different parts of the section; and this in turn requires that in order to have the thinner portions of the section sufficiently plastic for the finishing passes through the rolls, the head must be so hot when it leaves the rolls as to be almost semi-fluid; and so the rolls do little of that effective compressive work which unquestionably is essential for properly consolidating and toughening either wrought-iron or steel. This unequal temperature after leaving the rolls also makes it much more difficult to insure that the rails shall be straight when cool, and hence results in more "gagging." As there exists also a constant and injurious tendency to roll even the thinner parts tolerably hot, in order to quicken the process, save making seconds and reduce the number of passes, it will be seen how probable it is that the heads of many rails have been leaving the rolls in but little better molecular condition than when they entered them.

In European practice no such extreme conditions prevail. The double-headed or "bull-head" sections are nearly symmetrical about their horizontal axis. Even in respect to the increasing proportion of flat-base American sections used in European practice, the tendency is to use narrower and thicker bases and thicker webs than have of late prevailed here. It seems probable that European practice has been in this respect more nearly correct than ours, and that our manufacturers have been at times suspected unjustly of using inferior metal and processes, when the real fault lay in the harder problem given them to solve, because of the form of the section.

CORNER RADIUS.

Third.—Your committee recommend $\frac{1}{4}$-inch corner radius as a standard for sections of all weights.

Your committee did not expect such unanimity in favor of a short corner radius. They can only say that they have especially endeavored, in every way, to secure discussions from those supposed to favor a long corner radius corresponding to the now standard $\frac{5}{8}$-inch wheel fillet. Only one such discussion has been offered.

LOWER CORNER RADIUS.

Fourth.—Your committee recommend $\frac{1}{16}$-inch lower corner radius for the head as a standard for sections of all weights.

The purpose of the very short radius is, of course, to secure as much bearing as possible for the fish-plate, but your committee are unable to see that they can do any harm even if no fish-plate is used. The evidence of the discussions from the rail-makers is that there is no difficulty in rolling the section, even if the corner be a point, as some of the sections submitted have it. The specific section on which the question was based showed a $\frac{3}{32}$-inch radius, and it is impossible to say if as many would have approved it had it been $\frac{1}{16}$ inch instead; but from the general tenor of the discussions your committee feel satisfied that they will do so now, and the principle of the short corner being approved the committee felt that they should recommend as short a one as was clearly practicable.

VERTICAL SIDES.

Fifth.—Your committee recommend that, starting from a sufficient base width of head to give ample bearing for the joint or to conform to recommendation No. 1, the sides be carried up vertical as a standard for sections of all weights.

Starting from a proper base width, which appears the proper point to start from, and carrying the side up vertical instead of inclined inward, in the first place increases the top-bearing surface, and in the second place increases the life of the rail by a trifling addition to the weight of the section near the upper corner, where the metal is most useful and long lived. By the vertical side the difficulty about the gauging point is done away with, and the head is made more nearly symmetrical with the base. The contrary practice starts with a given top width, and argues that by flaring out the sides there is more metal to be worn away before the metal becomes useless, while the bearing for the angle-bar is increased, which is true. But the added metal is put on chiefly at the bottom of the head, where it is least effective, and is cut away by the flange when it does reach it almost as fast as if it were lead. After a head has been designed with such an outward flare, by filling out the corner so as to restore the vertical side the life can be still further prolonged, as respects both flange wear and top wear, by metal very effectively disposed.

As respects any of the preceding recommendations, your committee see no reason why they will not give an equally favorable section for either curves or tangents, and either for angle-bar joints or for any form of base-support joint. An argument of some strength is advanced in favor of an inward flare for such joints, but your committee see no gain therefrom corresponding to the loss. Your committee do not deem it proper to go beyond the above recommendations and attempt to elaborate details for standard sections complete. All that is included within the scope of their instructions they have now done. Anything beyond this must be done by a committee expressly appointed to recommend standard forms of rail sections, and not merely to "consider the proper relations to each other of the sections of railway wheels and rails." But the fact that such unexpected unanimity of opinion has developed in respect to the proper form of the head of the rail section encourages the committee to believe that a moderate amount of intelligent effort would secure the adherence of three-quarters, at least, of the engineers and railway mileage of the country to a set of standard sections elaborated after due inquiry and comparison of views.

New railway projects include the consolidation of the proposed Denver and State Line Railroad with the Rio Grande and Western. The new company propose to build nearly 2500 miles of new road through the agricultural region lying between the Great Salt Lake and the Arizona line. The capital is placed at $15,000,000. C. W. Drake, of New York, is treasurer.

Failure of S. Robbins & Son.

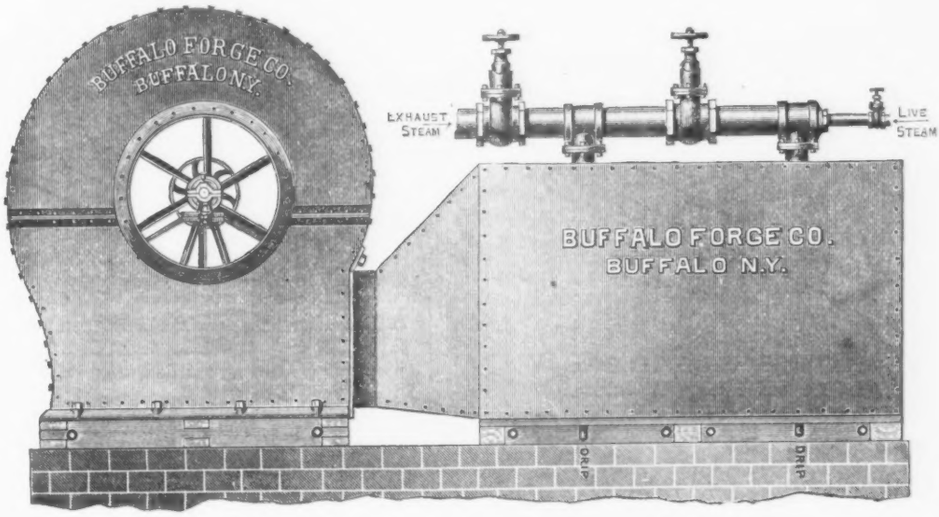
After confessing judgment for $14,800 to the Kensington National Bank for money loaned, the old-established iron firm of S. Robbins & Son, proprietors of the Philadelphia Rolling Mills and Blast Furnace, on the 26th ult. made a general assignment for the benefit of creditors to Edward H. Wilson, of the iron commission firm of E. H. Wilson & Co., 222 South Third street, who are creditors to a considerable amount. The liabilities are estimated at $100,000 and the assets at $47,500. The latter consist of the iron-works, plant, stock on hand and book accounts. The real estate which has been occupied by the firm belongs to the estate of Stephen Robbins, deceased, but it is claimed that it would not bring at a forced sale more than enough to satisfy the mortgages which are against it. The firm of S. Robbins & Son consists of John T. Robbins and Harry F. Hall. It was founded in 1857 by Stephen Robbins and became well known all over the country. The business was conducted successfully until 1873. Stephen became involved in the prevailing depression. To tide the business through, John Robbins, brother of Stephen, loaned the latter $170,000. Ever since that time the business has been conducted with the primary object of repaying this heavy loan, with varying success. After the death of Stephen Robbins, which occurred about 18 months since, Harry F. Hall became a member of the firm. There are two large mills, employing about 300 men. The blast-furnace has not been in operation for many years. It is the only one in the city, and was started in 1873. That very year pig-iron, of which Robbins & Son had a very large stock on hand, dropped largely in value, so much so that the firm saw $100,000 of their assets swept away. For a time, in in face of this great loss, they kept the furnace in blast, but the losses were so steady that the firm had to draw the fires. John T. Robbins, who is now senior member of the firm, said that the mill would be kept working until it was forced to shut down. He hoped things would not come to such a pass. The failure he attributed primarily to the large debt which the successors of Stephen Robbins had to shoulder when the business came into their hands. Their product was finished bar-iron, so that the Southern output of pig did not much affect them. The creditors are generally manufacturers of pig-iron.

The creditors held a meeting on the 1st inst. A statement of the liabilities and assets of the firm showed that the total liabilities were $126,153.58 and the assets $62,721.22. The situation was thoroughly discussed, and a majority of the creditors seemed disposed to be lenient, and favored a scheme to put the firm on their feet again. A committee was appointed, and after a consultation it was agreed to recommend a settlement on a 75-per-cent. basis, payable in one, two and three years, with interest. The creditors accepted it.

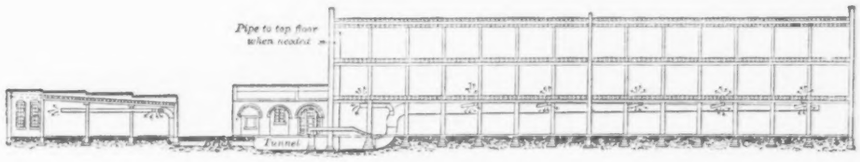
Railway builders in the Northwest are throwing out their iron arms to embrace the fair province of Manitoba. A few days ago the Northern Pacific Company purchased the great Northwest Central Railroad, running from Winnipeg to Edmonton, the transfer to be made July 16. The Northern Pacific will extend it to the Pacific Coast, which it will strike at Skeena Bay, to Vancouver. The president of the Northern Pacific says: "We are building new lines very rapidly all through Manitoba, and regard that as one of the most valuable parts of our whole system."

The Hot-Blast System of Warming Buildings.

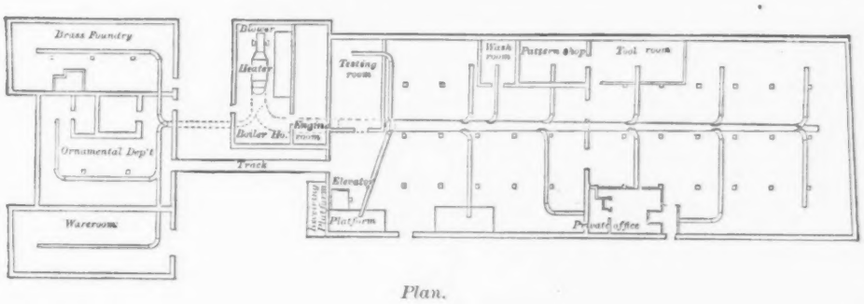
The system of heating workshops and large buildings by means of a mechanical circulation of hot air known as the indirect radiation or hot-blast system has of late years attracted much attention. We herewith illustrate the apparatus made by the Buffalo Forge Company, of Buffalo, N. Y., and its practical application to a large wagon-works in Binghamton, N. Y. By reference to the accompanying engraving it will be seen that the apparatus consists of a blower and heater combined. The steam is conducted through the pipes of the heater, through which the air is blown, and the heated air is then passed through ducts to all parts of the building. It is claimed that the hot-blast system costs less both in the items of first cost and running expenses than the ordinary methods of heating, as it requires a reduced area of heating surface, and is so constructed that in a majority of factories where large engines are used only a small amount of live steam is required, it being possible, except in the severest weather, to heat the building with exhaust steam from engine alone. Different rooms, although requiring different degrees of temperature, are heated uniformly in every part, as the warm air is forced to the most remote corners in every part of the building. In this system the desired temperature can be maintained by the attendant without his leaving the boiler-room and without interfering with his other duties. The fire risk is also reduced, as the steam-pipes, being inclosed in a steel jacket, do not come in contact with wood-work or accumulated rubbish. It is also claimed that it possesses the advantages of perfect ventilation, as pure air from the outside of the building is being constantly forced into the rooms. This air in its rapid passage through the heater is deprived of none of its invigorating qualities. In summer, by simply shutting the steam off from heater, without further alteration or adjustment, a constant supply of fresh air is forced to every part of the building, thus not only maintaining a refreshing coolness, but effectually dispelling all dampness in buildings having slight exposure to the sun's rays.



BUFFALO HOT-BLAST APPARATUS AS APPLIED TO FACTORIES.



Elevation.



Plan.

The Cotton-Seed Oil Trust Case.

Judge Rightor, of New Orleans, on the 21st ult., rendered a final decision in the suit of the State of Louisiana against the American Cotton-Seed Oil Trust for a forfeiture of its charter. The suit is an old one, having been first instituted more than two years ago, some time before a similar case was brought in New York against the Sugar Trust. The latter suit, however, was brought to trial more rapidly, and as a consequence Judge Barrett's decision anticipated that of Judge Rightor by a few months. Both cases were much the same, being brought by the States through their attorney-general.

The American Cotton-Seed Oil Trust is, the Judge declares, an illegal and invalid association, debarred and excluded from exercising any of the franchises or privileges of a corporation within that State. It pretends to be acting as a corporation, whereas, as a matter of fact, it is not duly incorporated, and has therefore been usurping, intruding and unlawfully exercising certain franchises and privileges. The decision is brief but strong, and takes the position that corporations like the Cotton-Seed Oil and similar trusts are opposed to the public interest and cannot be incorporated under the laws of Louisiana. It is another in the line of decisions against these combinations, which has shown that this country can find relief from them through judicial proceedings.

William Cramp & Sons, of Philadelphia, have contracted to build an iron steamer with triple expansion engines for the Metropolitan Steamship Company, the model to be similar to that of three steamers already on the Boston line.

Steam-Engine Working-Beam.

The steam-engine working-beams of which we herewith present drawings have been recently patented by the well-known mechanical engineer, Charles E. Emery, of Brooklyn, N. Y.

The beam of the typical American beam-engine shown in the elevation, Fig. 5, is constructed with a heavy lozenge-shaped strap of wrought-iron, into which is keyed a cast-iron web in the general form of a cross, with horizontal arms longer than the vertical ones. At the longer angles of the lozenge pin-holes are provided for the main connections. The web of the beam is provided with a central opening for the main center pin and other openings each side of the same for connections to pumps, &c. The beam-strap is ordinarily a large forging, "built up," as it is called, by welding together many pieces. A forging of this kind is deficient in strength, homogeneity, and extensibility as compared with smaller bars of rolled iron. Such beam-straps have broken in many cases, causing the wreck of the principal parts of the engine and much of the surrounding woodwork, and also not infrequently loss of life.

In the beam illustrated the beam is composed of a number of eye-bars similar to those used in the construction of bridges, which are articulated together and secured in tension over the web of the beam. The art of making eye-bars has reached a high state of perfection. The shanks are in such form that they can be worked so as to secure the nighest possible tensile strength of the material, and by well-known processes and proportions the eyes can be made of the same strength as the bars. The eye-bars can therefore be made much stronger per unit of section than the heavy forgings previously used. A defect in one will rarely cause breakage of the whole, and if the number of bars and factor of safety be made sufficiently large one bar may break and the others continue to do the work until the difficulty is discovered and remedied.

Th several forms of strap proposed by Mr. Emery are clearly shown in the engravings and will be readily understood. In all cases it is intended to make the web of the beam of the same general shape as that now used with ordinary beam-straps. In Fig. 1 the four sides of the beam-strap are made up of eye-bars each of a length to form a side of the rhomboidal figure. The several bars are joined together at the ends and at the top and bottom by large pins. The former pins may be extended laterally and constructed with journals for the main connections. The eye-bars on each of the sides of the rhomboidal figure are preferably arranged on the pins in pairs, the outer ones to the right and the inner ones to the left, or *vice versa*, and this arrangement is duplicated as many times as is necessary to secure the strength, four pairs being shown. In some cases, however, an odd number of heavier bars may be arranged on one side and an even number of lighter ones with the same aggregate thickness on the other, as is common in bridge construction. The bars below the center engage at their ends with those above in the same general way—that is, they are arranged in pairs—the outer ones up and the inner ones down at one end of

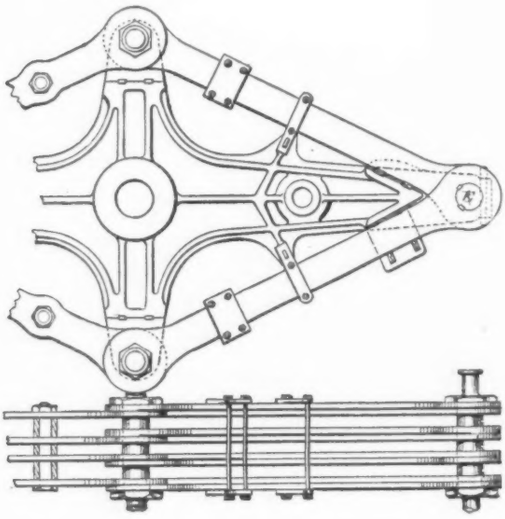


Fig. 1.

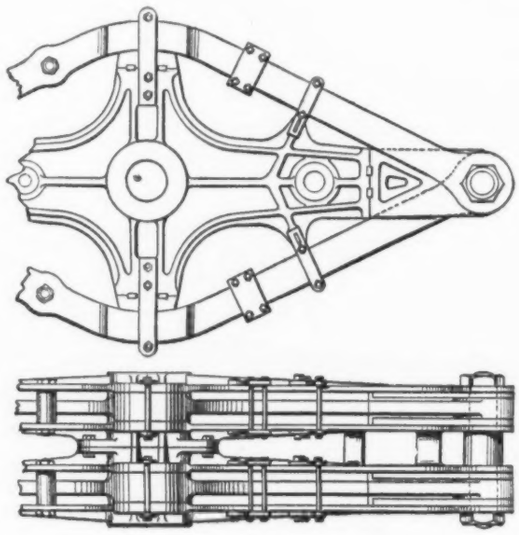


Fig. 2.

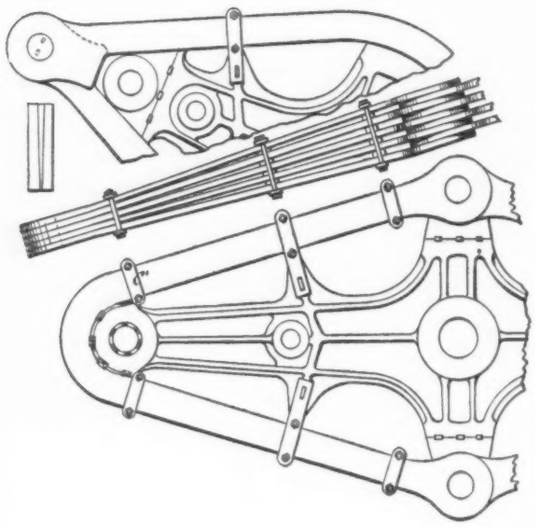


Fig. 3.

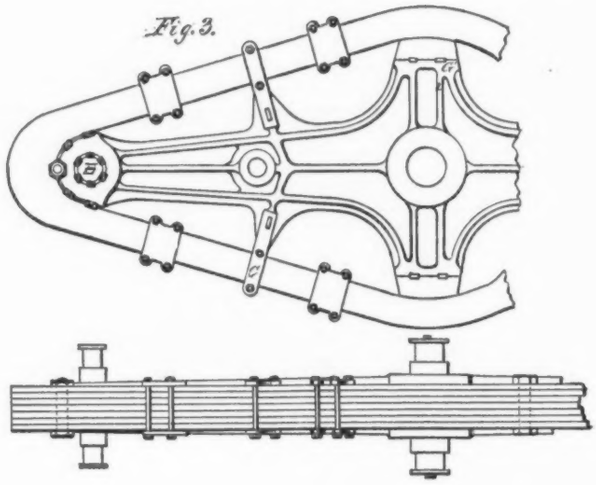


Fig. 4.

STEAM-ENGINE WORKING-BEAMS.

the beam, and the inner ones up and the outer ones down at the other.

In Fig. 2 eyes are provided only at the ends of the beam, and the eye-bars are bent, as shown, over the two side arms of the web and thickened at the bends to keep up the strength. In Fig. 3 the eye-bars are bent around the ends of the web.

The beam-strap shown in Fig. 4 is divided longitudinally into a number of parts, each resembling in elevation the shape of beam-straps of former construction, but the total thickness of the strap being made up of a number of comparatively thin sections, each can be better and more uniformly worked in the operation of forging and can be made much stronger per unit of section and more reliable, for reasons well known by those skilled in the art. The several parts are laid closely together, fitted as a unit over the arms of the web and secured to the same by keys in substantially the same way as when the strap is made of one piece. Thus connected the several parts will act together in tension as a unit, the same as if they had been forged together, but in compression their full strength cannot be utilized unless they are prevented from buckling. This is accomplished by clamping them together by means of clamps of different forms adapted to the portion of the compound strap

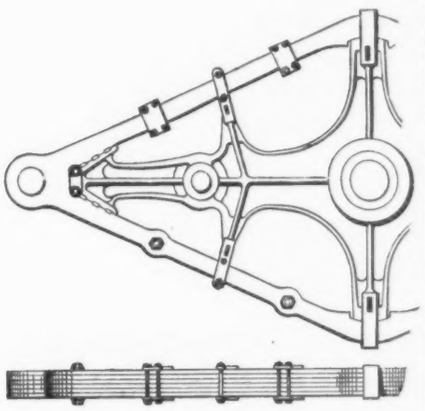


Fig. 5.

operated upon. When the end pins are put in the ends of the web the strap is secured over it with keys.

Wide Distribution of Southern Iron.

Mr. James Bowron, secretary and treasurer of the Tennessee Coal, Iron and Railway Company, writes to the Chattanooga *Tradesman* as follows:

Having occasion to abstract our order-book for last year I find the following result, and send it to you, thinking it might be interesting. The information has not appeared in print anywhere else, viz.:

State.	Tons.	State.	Tons.
Ohio	65,591	Rhode Island	818
Missouri	23,739	Wisconsin	817
New York	22,493	Louisiana	588
Keatucky	19,806	West Virginia	387
Michigan	16,582	Kansas	303
Illinois	16,193	Maryland	208
Alabama	15,790	Nebraska	234
Tennessee	13,184	Texas	21
Indiana	9,599	California	150
Pennsylvania	6,777	Arkansas	122
Massachusetts	3,929	Mississippi	115
Iowa	2,300	Minnesota	70
New Jersey	1,820	Delaware	36
Connecticut	1,505	Georgia	18
Colorado	1,200	North Carolina	15
Total			224,634

This represents pig-iron actually sold to market customers and is outside of our own consumption. Do you think that any other order-book in the United States can duplicate this record?

The total sales to different sections by this company, the largest producer of pig metal in the South, are conveniently expressed in the following table:

	Tons.
Eastern sales	37,648
Northern and Western sales	156,620
Southern and Southwestern sales	30,366
Total	224,634

Mineral Production of New Jersey.

From the annual report of Prof. Geo. H. Cook, State Geologist of New Jersey, which has just been received, we take the following statements relative to the output of iron and zinc ores in 1888, as compared with previous years:

The output of the iron mines of the State for the year 1888, as shown by the shipments of iron ore from stations in the State and the amounts used at furnaces which do not come in the tonnage of the railroad lines, aggregated 447,738 tons—a falling off of 100,051 tons as compared with the production of 1887. For the convenience of reference, the statistics of iron ore mined in the State for the years 1870–1888, inclusive, are here inserted in a tabular form. Estimates and United States census figures at intervals back to 1790 are also given at the head of the column:

Years.	Tons.	Years.	Tons
1790	10,000	1877	315,000
1830	20,000	1878	409,674
1855	100,000	1879	488,028
1860	164,900	1880	745,000
1864	226,000	1881	737,052
1867	275,067	1882	932,762
1870	362,636	1883	521,416
1871	450,000	1884	393,710
1872	600,000	1885	330,000
1873	665,000	1886	500,501
1874	525,000	1887	547,889
1875	390,000	1888	447,738
1876	285,000		

This tabular statement shows that from 1870 to 1874 there was a gradual and steady increase in the annual production. The financial depression in the latter part of 1873 marked a turn in the rate of production, and the lowest output for the decade was reached in 1876. The product for 1877 was slightly in excess of that of 1876, and from that year onward there was a gradual rise to the boom of 1879, which showed itself in the large increase in 1880. The maximum was attained in 1882.

The product of the zinc mines for the year 1888, as shown by the shipments over the transporting lines, was 46,377 tons. The following tabular statement shows the production of the zinc mines of New Jersey for a number of years:

Years.	Tons.	Years.	Tons.
1868	25,000	1882	40,138
1871	22,000	1883	56,085
1873	17,500	1884	40,094
1874	13,500	1885	38,526
1878	14,467	1886	43,877
1879	21,937	1887	50,220
1880	28,311	1888	46,377
1881	49,178		

The Life of Steel Rails.—A report of much interest on the life of steel rails has just been made by a commission representing the various German railway companies. It records the result of observations extending over a period of six years on lines of railway in Germany, Austria, Hungary, Holland and Belgium. According to this report, the commission deduce from the cases under their observations that the durability of a steel rail under certain fixed conditions may be reckoned at an average of 35 years. The conditions presumed are an annual traffic of 3,430,000 tons, and a minimum and maximum of wear and tear allowed for of 0.007 and 0.017 mm. The commission admit, however, that before reaching this maximum of wear and tear any rail would probably have to be condemned on account of the roughness of its surface. The figure of 3,430,000 tons adopted represents the average traffic on the lines of railway throughout Germany, this being equal to 28 passenger and 10 goods trains per diem. There are, of course, exceptional cases which are outside of those from which the average of duration has been assumed. Thus, on the Housinger line, where there are neither steep gradients nor sharp curves, and the use of the brake is comparatively infrequent, the wear of the rails amounted to only 1 mm. for about 100,000,000 tons of traffic. It will, of course, be recognized that the data employed and the deduction made from them cannot be too rigidly accepted; but the extended use of steel rails is of such comparatively recent adoption that any authoritative guide for estimating their durability must prove of very great value to the profession.

Bethlehem Ahead of Time.

The advertisement of the Secretary of the Navy, addressed to the steel manufacturers of the United States, inviting all domestic manufacturers of steel to specify, in competition with one another, upon what terms they would be willing to prepare for the production of and to produce the forgings and armor-plate required for modern ordnance and armored ships, was issued under date of August 21, 1886. At noon on March 22, 1887, bids were opened by the Secretary of the Navy. As the Bethlehem Iron Company's bids were the only ones covering both gun forgings and armor-plates this company was awarded the work contemplated by the Navy Department, and contracts were subsequently duly executed on May 1 and June 1, 1887, respectively. The first delivery of 8-inch gun forgings was fixed by the terms of the contract at three years after its execution (two and one-half years being allowed for the completion of a plant), which would make the first delivery due May 1, 1890 On June 21, 1889, the first shipment, that of a tube for an 8-inch breech-loading rifle, was forwarded from the Bethlehem Iron Works to the commandant of the Navy Yard at Washington, being 10½ months in advance of the contract time of delivery, thus fully vindicating the confidence expressed by the Secretary of the Navy in the ability of the Bethlehem Iron Company to carry out their promises. —*Iron and Steel Bulletin.*

John Birkinbine, secretary of the United States Association of Charcoal-Iron Workers, announces that the association will hold their tenth annual meeting early in September, in Wisconsin, using Milwaukee as a point of assembly and going as far as Ashland, Wis., and possibly also to Duluth, Minn. Arrangements of details are now being perfected. It is possible that the trip will embrace the Gogebic and Vermillion iron-ore districts. Full information will be given in a subsequent notice. It is desired that members of the association will prepare papers or collect data of interest for presentation at the sessions during the meeting. The date of the meeting will be probably September 10.

Oil shipments across the ocean in bulk affect the iron trade by checking the demand for barrels. It is stated that there are not one-tenth of the barrels made for oil shipments in this country now that there were formerly. Then the daily shipments of barrels were between 45,000 and 50,000, and for such an amount it would take over 250 tons of hoops. A set of six hoops for an export barrel weighs 12 and on a domestic one 10 pounds. This was enough to keep two large rolling-mills on double turn.

THE AMERICAN ENGINEERS IN LONDON.

(*Editorial Correspondence.*)

Wednesday afternoon and evening the much-scattered party of engineers began to arrive at the different overcrowded London hotels, the majority of them choosing locations within easy reach of the headquarters, at the Institution of Civil Engineers, 25 Great George street, in the immediate vicinity of Westminster Abbey. The London season being at its hight and the rush of the English and American tourists stopping on their way to and from Paris and the Continent being enormous, the great hotels were overcrowded and quite a number had the uncomfortable experience of rushing through the streets in cabs, knocking at one door after the other before finding a place to rest their weary heads.

Early on Thursday morning, June 13, the party, now numbering nearly 300 persons, spent an hour wandering about famous Westminster Abbey, and then they were marshaled to Henry VIIth's Chapel, where the Dean, Dr. Bradley, delivered a scholarly and polished address on the sacred and historical associations of the Abbey. At its close the Dean kindly conducted a number of the engineers and their ladies through some of the principal parts of the famous Abbey, commenting and explaining. Then, by special permit, the Americans visited the Houses of Parliament.

In the afternoon the formal reception took place at the spacious rooms of the Institution of Civil Engineers, the largest and oldest English engineering body, having a membership of over 5500. Last year the house adjoining their former quarters, occupied until his death by Sir Joseph Whitworth, was acquired. The lower part of the building is given over to offices and a large reading-room, the upper part being in use for a library of noble dimensions, crowded to the lofty ceiling with engineering works, while a series of three parlors were courteously thrown open to the American engineers for their use as headquarters. There a number of the staff of the society were constantly at the disposal of the visitors, doing fatiguing and, we regret to add, at times exasperating duty. Overwhelmed with questions, acting as postmasters of the entire party and as the distributors of the tickets to many of the entertainments, their devotion to the comfort of the visitors was unflagging. Had it not been for the thorough organization of that service, by James Forrest, secretary of the Institution of Civil Engineers, Mr. Bradley and his other assistants, the visit of the engineers would not have passed off with as little confusion as it did.

After a reception in the library, the engineers gathered in the great meeting hall of the institution, a splendid room, seating over 400 persons. Grouped in a semicircle around the chair, occupied by Sir John Coode, recently elected the president of the institution, sat a number of England's famous engineers on one side and the members of the American committee on the other. The contrast was striking. The majority of the former were men advanced in years, types of that hale and hearty old age upon whom the years seem to rest lightly, a group which no profession in America could furnish, since with us the approach to three-score and ten leaves deeper marks, however vigorous the mental activity may remain. Prominent among them, eagerly sought by those who are interested in iron and steel making, was Sir Henry Bessemer. Your correspondent had the privilege of a short conversation with the famous inventor, a privilege all the greater since Bessemer has been forced, under instructions of his physicians, to renounce any hope of ever again leaving England. He told your correspondent that for 15 years he had been unable even to cross to the Continent, and there was a slight ring of sadness in his voice when he said that he had abandoned all hope of ever crossing the Atlantic. He alluded to the statement, jocularly made, that it needed care to rise in the morning in England to escape the danger of falling off into the sea. He added that he took precautions and had thus far escaped. Sir Henry is tall, and, considering his years, erect. His face has a kindly, benevolent expression, and his clear eye gives hope that he will be spared to the world for many years to come. Among the others present were Sir Robert Bruce, who has just occupied the presidency of the institution; Dr. William Pole, James Forrest, secretary; Lord Armstrong, the venerable Thomas Hawksley, Sir Frederick Bramwell, Sir Joseph Hawkshaw, E. H. Carbutt and Daniel Adamson. The American committee are: D. J. Whittemore, H. R. Towne, W. Kent, C. J. H. Woodbury, J. T. Hawkins, William Wiley, E. V. D'Invilliers, A. E. Hunt, Octave Chanute, T. C. Clarke, S. W. Baldwin, W. Forsyth, Oberlin Smith, C. Archbald, W. Dempster, Dr. C. E. Emery, Clark Fisher, H. G. Torrey and C. Kirchhoff, Jr.

After an introduction of some of the members of the committee, the president, Sir John Coode, read an address, beautifully framed and illustrated copies of which are to be sent to the four engineering societies. Prof. R. H. Thurston, of Sibley College, Cornell University, responded eloquently, dwelling upon the important results likely to grow out of the closer approach to one another through personal acquaintance, growing out of the meeting of English and American engineers on English soil. After partaking of refreshments the members sought their temporary homes, to make preparations for the great Guildhall dinner.

We have the best of authority—that of Sir Thomas Chambers, who is one of the officials of the city of London—that this has been the first time that the famous Guildhall has been thrown open for an entertainment not official in character. About 500 persons sat down to the 12 tables in the great hall, which is over 150 feet long, 50 feet broad and over 50 feet high, handsomely and appropriately decorated for the occasion, Sir John Coode occupying the chair. At his right sat Hon. Robert Lincoln, the United States Minister, and at his left Lord Saltbridge. At the main table were seated, besides a number of Americans, Sir Edward Thornton, Sir John Fowler, James Abernethy, past president of the institution; the Dean of Westminster, Sir Henry Doulton, Charles Cochrane, Sir William Thomson, General Sir Richard Harrison, Sheriff Newton, Sir I. Lowthian Bell, Lord Armstrong, Archdeacon Farrar, Judge Lushington, John Aird, M.P.; Charles Hawksley, Sir Henry Bessemer, Edward Woods, past president of the Civil Engineers; Sir Frederick Abel, Prof. Boyd Dawkins, Sir David Thomson. Among the others present we may note: Daniel Adamson, past president of the Iron and Steel Institute; William Atkinson, Benjamin Baker, W. H. Barlow, past president of the Civil Engineers; Professor Bauerman, of the School of Mines; T. J. Bewick, who is connected prominently with lead-mining interests of Great Britain and with precious mining interests in the Rocky Mountains; Mr. Brotherhood, well known in connection with engine-building; T. F. Brown, connected with mining in Wales; Henry Chapman, J. L. Clark, J. Cochrane, Professor Elgar, of the Naval Architects; Prof. G. Forbes, Perry C. Gilchrist, who is one of the inventors of the basic process; Arthur Greenwood, of Leeds; Jeremiah Head, of Middlesborough; J. S. Jeans, the secretary of the Iron and Steel Institute; Dr. Hopkinson, Sir William T. Lewis, of South Wales; F. C. Marshall, of Newcastle-on-Tyne; E. P. Martin, of the Dowlais Works; Mr. Nordenfeldt, the inventor; Mr. Pontifex, so largely interested in lead and copper ventures; W. H. Preece, the great electrician; Sir Edward J. Reed, James Reid, of Glasgow; Sir Robert Rawlinson, E. Windsor Richards, formerly of Bolckow, Vaughan & Co., now of the Low Moor Works; Dr. J. Riley, C. P. Sandberg, well known as a rail expert; Alexander Siemens, Mr. Sopwith, mining engineer; John I. Thornycroft, the boat-builder; R. H. Tweddell, Prof. W. C. Mervin, Mr. Wrightson, prominently connected with iron and steel making in the Middlesborough district; and A. F. Yarrow, the ship-builder.

After discussing an elaborate *menu* the Americans had the pleasure of being summoned to silence by a professional toastmaster, who climbed upon a small bench and in solemn tones announced either the next speaker or the song by a choir with which the toasts were interspersed. During the course of the evening, too, the majority of the visitors for the first time went through the ceremony of drinking "the loving cup." Huge silver tankards circulate from guest to guest. Each person receives it, standing, with a bow from his neighbor on the left, grasps it with both hands, drinks, bows, turns to his neighbor on the right, bows again and remains standing until the latter has gone through the same performance. The event of the evening was the speech of Hon. Robert Lincoln, Minister to England, who made his first appearance in public at the banquet. Mr. Lincoln spoke well and was received with tremendous applause. The other speakers were D. J. Whittemore, H. R. Towne, A. E. Hunt, Prof. Elihu Thomson, Sheriff Newton, T. C. Clarke and Sir John Coode. The greater part of the guests were hardly able to hear more than occasional snatches of the remarks made, the hall being too large to enable speakers not accustomed to addressing large audiences to be heard. The evening closed with a social gathering in adjoining rooms.

Early Friday morning, June 14, the engineers split up into three parties, the first visiting the East and West Indian docks and the Royal Victoria and Albert docks, the Beckton Gas Works, where luncheon was served by invitation of the Chartered Gas Company and the Metropolitan Main Drainage and Sewage Purification Works, at Barking. The second party left also by boat from the Speaker's Chairs, Clock Tower, Westminster, proceeding by boat first to the foundations and piers of the Tower Bridge. They inspected the plant of the marine engine works of Humphreys, Tennant & Co. at Deptford Pier and landed for luncheon at the "Ship," at Greenwhich, famous for its fish dinners. It is reported that one member, after the eighth course of fish in every imaginable form, committed the crime of asking for whale on toast. The "Painted Hall" and the famous Naval Museum, with its models and relics, its school-ship, &c., were visited, and then the party re-embarked for the ship-building and torpedo yard of the Yarrows, at the Isle of Dogs. The engineers had the pleasure of steaming at full speed on one of the latest of Yarrows' torpedo-boats, famous for their unprecedented speed and the wonderful facility with which they are handled. After inspecting the docks and the freight depots of the North London Railway, at Poplar, the party returned happy and tired.

A third contingent went first to the Marine Engine Works of J. & G. Rennie, at

Holland street, Blackfriars, and then proceeded to the Falcon Wharf Section of the London Hydraulic Power Company, and after visiting the works of Peter Brotherhood, where the engines of the same name, widely known, are built, at Belvedere road, Lambeth, and the works of Maudslay, Field & Co., at Westminster Bridge road, saw a second station of

THE LONDON HYDRAULIC POWER COMPANY,

at Millbank street, Westminster. The company was established six years ago for the purpose of supplying a cheap and efficient motive power suitable for the requirements of London. For 40 years past, at the docks and railway goods stations, high-pressure hydraulic-lifting machinery has been generally employed, and also in many large wharves and warehouses, hotels, &c. Through the operations of the company this valuable power has been made available for general public use. More than 35 miles of hydraulic mains are at present laid in London, between the London docks and Victoria Station, Westminster, and in Pall Mall, Piccadilly, &c., on the north side, and between Waterloo Bridge and Dockhead on the south side of the river, thus embracing nearly the whole city, Westminster and Southwalk. The mains laid in the street are from 7 inches internal diameter to 2 inches. They are chiefly of cast-iron with flanged joints and packing rings of gutta-percha. The mains are kept charged by powerful pumping engines located at the Central Pumping Station, Falcon Wharf, Blackfriars; Millbank street, Westminster; and elsewhere. The reservoirs of power consist of capacious accumulators, loaded to give a pressure of 750 pounds per square inch, producing the same effect as if large supply-tanks were placed at 1700 feet above the street-level. The first pumping station erected was that at Falcon Wharf, Holland street, Blackfriars. At this station there are four Ellington's triple compound condensing engines of 200 horse-power each, constructed by the Hydraulic Engineering Company, Limited, of Chester. The boilers are of the Lancashire type, fitted with Vicar's mechanical stokers, worked by a Brotherhood hydraulic engine. The water used is pumped direct from the river, and is purified by mechanical filters on Perrett's system, made by the Pulsometer Engineering Company. The filtering medium is sponge. The pumping station at Millbank street, Westminster, has been recently erected and works in connection with Falcon Wharf. At Westminster there are three engines. The water is here pumped from the gravel overlying the London clay, and raised into tanks over the engine by hydraulic pumps. This water contains a large quantity of iron, which is rapidly deposited on exposure to the air. The water is treated by the Porter-Clark lime process, and filtered through presses. The capacity of the Falcon Wharf Station is 3,000,000 gallons per week, and the Westminster Station 2,000,000. The present supply to consumers is 3,200,000 gallons per week. A new pumping station near the London Docks is in progress, which is being laid out to deliver 4,000,000 gallons per week. This station will be required, as soon as completed, to meet the rapidly-increasing demand for power. The cost of the works in London has been so far about £200,000. The present gross revenue of the company in London is about £25,000 per annum. The dividend paid for 1888 was 4½ per cent.

PASSENGER LIFTS.

Over 400 passenger elevators are at work from the mains of the company, the majority having been fixed since the company were established. The hydraulic power is supplied direct to elevators, presses and fire hydrants and other apparatus of similar character, without the use of any engine or power-producing machinery, but the hydraulic pressure can also be used for driving engines of special construction in the same way as steam or gas. Hydraulic engines worked from the company's mains are now used for all sorts of purposes, such as coffee-grinding, ventilating, working elevators and crushers, driving dynamos and general machinery. Their use is so far confined to driving small machinery working intermittently The hydraulic power is also used for pumping water from deep wells or from the basement of a building to a tank on the roof, or for the drainage of cellars, and for supplementing the deficiency of pressure from the water-works mains. No engine is required, but only small direct-acting rams, which are often allowed to run all night by themselves without any attention and frequently occupy no floor space at all, being placed below the floor or area. The progress of the company is best illustrated by the number of hydraulic machines worked from the mains at different periods:

June, 1884..... 96	June, 1887..... 527
June, 1885. 235	June, 1888.....720
June, 1886..... 389	June, 1889.....910

The number already contracted for will bring the total to 1100. The mains in the public street are laid at the cost of the company, the service-pipes only being charged to the consumers. Machinery required to utilize the power is supplied by the company on deferred payments or on hire, or consumers may order their machinery from any makers who will conform to the company's regulations as to its manufacture. The quantity of power used is measured in gallons through meters, and is supplied on a sliding scale commencing with a minimum of 30 shillings ($7.25) per quarter, including 5 shillings ($1.25) meter rent, for 3000 gallons per quarter down to about 50 cents per 1000 gallons for large consumptions.

The London Hydraulic Power Company have also erected at Kensington Court a complete installation for the supply of hydraulic power for working the passenger and service elevators which have been fitted up on the estate by the Hydraulic Engineering Company, Limited. The machinery used and the conditions differ materially from the arrangements adopted by the London Hydraulic Power Company for its general supply in the city and Westminster. The machinery has been specially designed to secure a degree of safety, economy and reduction of space occupied. The elevators are intended for domestic use, to be worked by any one in the houses without an attendant. The only moving part of the elevator, apart from the controlling gear, is a plain solid steel ram. The pressure pipes are laid in subways in the streets on the estate. The working pressure is 400 pounds per square inch. The pumping station contains duplicate machinery, and is designed to work from 80 to 100 lifts of this class. The only water used is that required for filling the system of pipes, and to make up waste. The water circulates throughout the system in the same way as electricity is supplied, the pressure being taken out of it when performing its work in the elevator cylinder, as similarly the intensity of an electric current is destroyed in passing through electric lamps. The only other undertakings of the kind in operation are at Hull and Liverpool. The Hull Company were established under Mr. Ellington's direction in 1876. The Liverpool Works have recently been completed in conjunction with the London undertaking.

After inspecting the Metropolitan Main Drainage Pumping Station, at Grosvenor Road, Pimlico, the engineers went to Lambeth Palace, an edifice more fully identified with historical associations than most of the ancient edifices of England. Wandering through the library and the guard-room, with its interesting series of portraits, the Lollard's Tower, the party reached the chapel, where they were received by Dr. Benson, Archbishop of Canterbury, who addressed them, pointing out the principal features of the sanctuary and sketching its history. He closed with a brief ceremony, capturing the hearts of all present by his kindly yet dignified manner and his simplicity.

Thence the engineers and their ladies wandered to the show-rooms of the famous Doulton potteries, where 2000 hands are now employed, not counting an equal number working in other establishments of the firm in the provinces. Sir Henry Doulton, to whose efforts the development of art pottery in England owes so much, and who was particularly instrumental in creating the salt glazed-ware, delivered an impromptu lecture to the engineers, giving full credit for their work to the artists who have seconded his efforts. Prominent among them is George Tinworth, who rose from the humble position of a potter to be one of the most famous modern interpreters of biblical subjects. A tour through the art studios and a part of the manufactory followed.

Saturday, June 15, was given over to a visit to Windsor, where rooms were thrown open to the engineers which have not been entered by those not within the charmed circle for ten years. The Institution of Civil Engineers entertained the visitors at luncheon at Albert Memorial Hall, after which a long drive was taken through the glorious Windsor Park to the Virginia Water At the same time another party witnessed a performance of the "Midsummer Night's Dream" by the dramatic company of the Shakespeare Reading Society in the grounds of Copped Hall, Totteridge, by invitation of S. B. Boulton In the evening there was a largely attended brilliant reception by Lord Brassey, which was rendered particularly interesting through the fact that the museum was thrown open. Lord and Lady Brassey made a trip around the world in their yacht Sunbeam, the latter writing a famous work. The originals of the illustrations of the book, a collection of drawings made by R. T. Pritchett, were also exhibited.

Sunday was passed quietly, the thoughtful hospitality of the English hosts providing tickets of admission to Westminster Abbey, Temple Church, Lincoln's Inn Chapel, the Foundling Hospital and the Metropolitan Tabernacle, while special facilities were offered to spend the afternoon in the Zoölogical Gardens.

Monday morning, June 17, the round of pleasures began again, first with a visit to St. James's and Buckingham palaces and the Royal Mews, a majority of the members attending a garden party at Holly Lodge, Highgate, by invitation of the Baroness Burdett-Coutts and Mr. Burdett-Coutts, M.P.

THE COURTESIES SHOWN BY FRENCH ENGINEERS.

The Société des Ingénieurs Civils prepared a most elaborate programme for the visit of the American engineers to Paris, covering the week from June 20 to June 26. The hospitalities to the American engineers began on the 20th by the reception of the visitors at Calais by a delegation of the Société. A special train, furnished by the Northern Railway Company, took the party to the station of Arques, near St. Omer, where the elevators of Fontinettes, on the Canal of Aire, to St. Omer, were inspected. These are hydraulic elevators which are substituted for canal locks. The 21st was given over to rest at Paris, to enable the American engineers to attend to their private affairs. On the 22d a general meeting was held at the exposition, in the parlor of the Société, on the first floor of Machinery Hall. An address

of welcome was delivered by M. G. Eiffel, president. This was followed by a visit to the Eiffel Tower. At noon a lunch was taken at the Restaurant Brebant, in the tower. In the afternoon the visitors were formed into seven groups to inspect various parts of the exposition, each group being placed under the charge of members of the Société. The first group inspected the mining exhibits; the second, metallurgy; the third, machinery and spinning; the fourth, iron and copper smithing and sugar works; the fifth, railways; the sixth, electricity, and the seventh, public works. Lists of the principal exhibitors under each department here given are published in the official programme of arrangements. They include a large number of the prominent manufacturers in and out of France. Sunday, June 23, was devoted to rest. Monday the visitors were divided into four groups, the first two making a visit to the sewers of Paris; the third visited the Manufacture Nationale des Gobelins Dyeing Works, Museum and the Institut Pasteur, while the fourth visited the Observatoire with an astronomer of the establishment, the Institut Pasteur, and the Ecole Nationale Supérieure des Mines. In the afternoon the visitors were taken in carriages to the works of the company furnishing public cabs, to the Compagnie des Omnibus, to the Dépôts, Boulevard Bourdon, and to the works, Rue Championnet. Tuesday morning was spent at the exposition, a meeting taking place in the parlor of the Société. Groups were then formed to visit the most interesting exhibitions, which were guided by the same persons as those on the 22d. The understructure of the luminous fountains was inspected. A special excursion was taken to the works for the utilization of sewage at Gennevilliers. In the afternoon the Historical Museum of the city of Paris was visited; also the Conservatoire des Arts et Métiers, the Hôtel des Invalides, in which is the tomb of Napoleon I, and the Jardin des Plantes. On the 26th the morning was occupied by a visit to the Hôtel de Ville, in which the basements and various halls and galleries were inspected, and a visit to the Musée des Thermes and the Hôtel de Cluny, in which are gathered the national antiquities and the most ancient monuments of Paris. Next the Bibliotheque Nationale, or National Library, with its manuscripts, medals, prints, &c., was visited, followed by a visit to the Manufacture Nationale de Sévres, or china manufactory. The American visitors were received most cordially and invited to make use of the rooms of the Société, either in their building, No. 10 Cité Rougemont, or in the gallery of Machinery Hall at the exposition. Cards were furnished, on which persons interested in special subjects could make known their requests, in order to be placed in communication with persons who could furnish the information. Every effort was put forth by the members of the Société to make the stay of their visitors as pleasant and enjoyable as possible.

Steel Pipe.

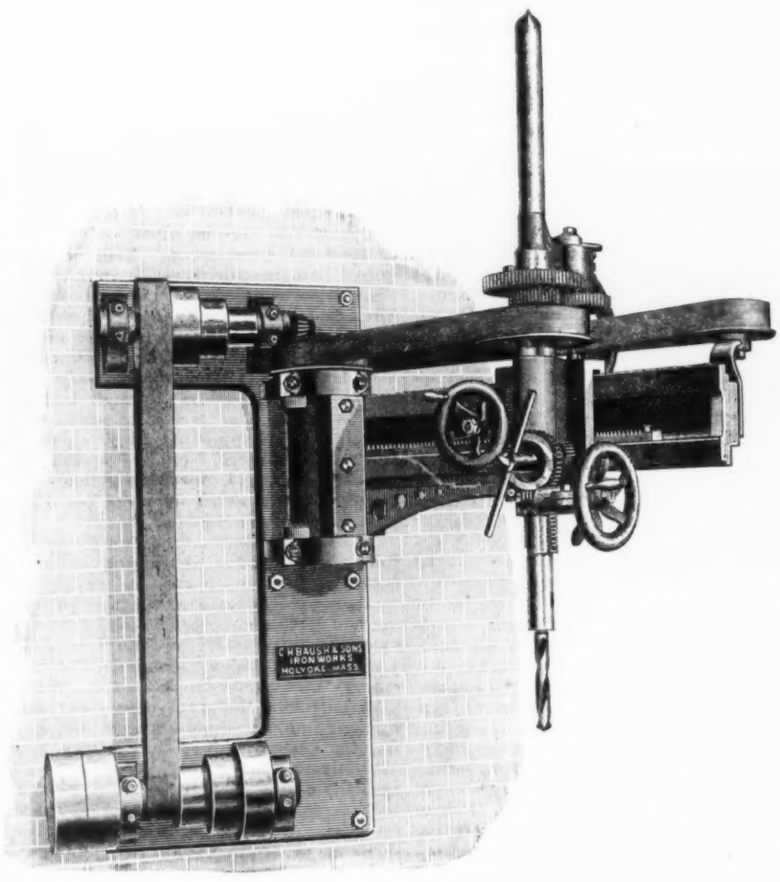
The welding of steel pipe, says the Ohio Valley *Manufacturer*, had not been fully mastered until the Riverside Iron Works, of Wheeling, after a long series of experiments, conquered the difficulties and became masters of the situation. The Riverside are now engaged on contracts for 75 miles of 6-inch steel pipe for the Standard Oil Company, who are the heaviest consumers of pipe of any private corporation in the world, and presumably the keenest and most experienced judges on account of the enormous quantities consumed. The Standard have had two experienced examiners at the Riverside since the contract began, who make a critical examination of every length turned out and only pass it upon the most thorough tests.

These two gentlemen, Messrs. Osborne and Whitford, while guarded in their expressions, made frank answers to all questions put by a representative of the *Manufacturer*, which sum up about as follows: The test of time and service is yet to be made, but theoretically steel has more endurance than iron, and all the tests of steel made above ground are decidedly in its favor. A test of from 1500 to 1800 pounds per square inch is applied, while the actual service is about 1000 pounds. It is made the same weight as wrought iron, and possessing a stronger tenacity will stand a heavier pressure; its expansion also is greater, while it can be hammered into any and all shapes without injury to its texture. The rust test, applied chemically, excels that of wrought iron. It possesses a greater duration of life and goes together with greater mechanical accuracy. The rejection of imperfect steel pipe will average from 3 to 5 per cent.; that of wrought-iron pipe usually averages from 25 to 28 per cent. The Riverside's mode of making joints is as good as any mill in the country, and their general mechanism is not excelled. They give conscientious attention to details, and excellence in little things gives perfection to the whole. While we cannot give the test of time, said the gentlemen, we are frank to admit that, so far as our experience and investigations have gone, all tests favor the superiority of steel pipe.

An English exploring party representing the Isle Royale Land Company left Duluth last week with a thorough equipment, expecting to open valuable deposits of copper on their property, comprising 83,000 acres on Isle Royale, in Lake Superior. The general superintendent is S. S. Robinson, of Detroit.

Wall Radial Drill.

The makers of this drill, C. H. Baush & Sons, of Holyoke, Mass., have endeavored in its design to combine all the features of convenience and utility which could be demanded in combination with strength and durability. The machine can be bolted to the wall in any convenient place in the room, or fastened to a pair of wrought-iron beams when it is placed in the center of the room. It will be noticed in the illustration that the frame-work fastened to the wall is very large, covering a large surface. The machine is heavily belted and geared so that large holes can be drilled easily. The back gears are located on spindles, so when large holes are drilled the power is brought direct to the spindle, thereby avoiding all chattering and slipping of belts. The spindle can easily and quickly be brought to any desired location where a hole is to be drilled. The drill illustrated will drill holes in the center of 8 feet. Whenever the machine is not in use the arm can easily be swung out of the way. The spindle is balanced and has quick return. There is also a large table with the machine, which is not shown in the illustration, to which the work can be bolted and set so that holes can be drilled at any angle desired. The swinging-arm is so fitted that the workman can swing it to any desired position and can instantly clamp it in place. The saddle on the swinging-arm is operated by rack and gear, a hand-wheel being placed near the hand-wheel for feeding the drill, so that the operator can set the drill to the work without moving about.



WALL RADIAL DRILL.

THE WEEK.

The rapid progress of such cities as Seattle and Vancouver on the Pacific Coast is an augury of the future commercial importance of that part of the world. Three years ago Vancouver, the terminus of the Canadian Pacific Railway, was scarcely known. Now it has a population of 10,000 and a property valuation of $6,604,000. The trade with China and Japan is, of course, a leading factor of the commerce of Vancouver. The imports by the Pacific steamers amounted in 1887 to 10,747 tons. In 1888 the imports were 20,601 tons. The exports to China and Japan by this line in 1887 were 3428 tons, while in 1888 they amounted to 18,802. Seattle, which also had an humble beginning, is rich enough to lose $15,000,000 by fire in a single day.

Lake ship-owners jumped at the offer of an English insurance company to accept 2½ per cent. if $3,000,000 insurance could be placed in a lump, this rate being ¼ better than they were paying before. At the present time it is said that not less than $5,000,000, comprising the cream of the lake insurance business, is placed directly through a London company. In New York the once prosperous great marine insurance companies have been nearly all snuffed out by English rivals by processes somewhat analogous.

It is broadly intimated that the Platt-Alger trip to Alaska has some reference to a renewal of the contract concerning the seal fisheries in Behring Sea now held by the Alaska Commercial Company, and which expires in May, 1890. It is not known what action Secretary Windom will take in the matter, as there are many applicants in the field and strenuous efforts will be made by all to gain the prize. It is estimated that the Commercial Company have cleared $100,000,000 in the 20 years the contract has been running. Last year their profits are said to have been about $7,000,000.

Apropos of the renewed rumors of the intended formation of a great anthracite coal trust, the Philadelphia *Inquirer* says it is reported that the suit against the Reading voting trust was begun to break up that trust so as to facilitate the organization of the coal trust. About $100,000,000, it thinks, would be sufficient to buy up a majority of the capital stocks of the seven leading coal companies. Their combined par capital is $166,250,361 and their present market value is about $186,500,000. These seven companies mine about 87 per cent. of the total anthracite product. The plan is said to be to put these stocks in trust, and guarantee the individual operators a profit of 25 cents a ton on all the coal mined by them.

England's naval defense bill, calling for the expenditure of £21,500,000, received the royal assent on the 31st of May, after a controversy prolonged for several months. It provides for the construction of 70 ships—10 battle-ships, 42 cruisers and 18 torpedo gun-boats—all to be completed and ready for sea in four and a half years from the laying down of the first vessel. Of the battle-ships 8 will be first-class ships, of 14,000 tons displacement and 17½ knots speed, and 2 second-class, of 9000 tons. Of the cruisers 9 will be first-class of their type and 7300 tons; 29, 3400 tons, of the Medea and 4 of the Pandora class—the official speed of them all being 20 knots. The 18 gunboats will be sharpshooters.

The trust furor is becoming contagious. Last week the Distillers' and Cattle Feeders' Trust securities made their advent on 'Change for the first time and speedily went kiting wildly This trust is said to be capitalized at $30,000,000 and claims to control 86 distilleries north of the Ohio River. Contrary to positive denials, it is affirmed that the new-comer is identical with the Whisky Trust, an institution of not altogether savory repute. Dividends vary from ½ to ⅝ of 1 per cent. a month. Headquarters are at Peoria, Ill.

The Dominion Government announces a reduction of the export duty on pine logs from $3 to $2 per 1000 feet, board measurement

S. Hirose and S. Tegima, who own large copper mines in the district of Igo, Japan, are visiting the United States to study the American methods of mining.

The competition of the Canadian Pacific Railroad is a constant source of complaint by the American lines, which are held in check by the operation of the Interstate law. A. N. Towne, general manager of the Southern Pacific Company, says that the Canadian road is now in practical control of the traffic from the Orient, which before the operation of the Interstate law was controlled by American roads, and that of the 10,000,000 pounds of cotton goods shipped from the United States to China in 1888, 60 per cent. went by the Canadian road and steamships. Westbound tonnage has been diverted in greater proportion. Mr. Towne argues for a modification of the long-and-short-haul clause of the law to permit American roads to meet the competition of foreign roads, and urges that the provision which prohibits pooling be revoked.

Before the war the high-water mark in cotton was 5,300,000 bales. The crop of last year is not yet entirely out of the hands of the planters, but those whose business attention is absorbed by the staple place it at 7,400,000 bales, an increase of 300,000 over the year preceding. This season, with average weather, it will be 8,000,000 bales, worth nearly $400,000,000 or five times the value of all the gold and silver produced in the United States in one year.

According to a recent publication of the Statistical Bureau at Berlin four-fifths of the steam machinery in the world has been constructed within the last 25 years. France has 49,500 boilers, 7000 locomotives and 1700 ship boilers; Austro-Hungary, 12,000 boilers and 2400 locomotives. In the United States the steam machinery, exclusive of locomotives, has 7,500,000 horse-power; in England, 7,000,000; in Germany, 4,500,000; in France, 3,000,000; in Austro-Hungary, 1,500,000. There are some 105,000 locomotives, with 3,000,000 horse-power, in the world. All the steam machinery in the world possesses 46,000,000 horse-power.

The new fire-boat for New York City, to be used for the protection of shipping, will be the most powerful of its kind built in this country. The Fire Commissioners received three bids—Julius Jansen offering to build the hull for $34,800, while John W. Sullivan and William Brown each offered to furnish hull, engines and machinery for $85,000. The boat will be 125 feet long and be able to go about 20 miles an hour. She will have four fixed water-towers, with swiveled nozzles, each capable of throwing a stream 4 inches in diameter for a distance of over 400 feet in any direction at will.

The new steamship Leona, for the New York and Texas Mail Steamship Company, was launched last week at the yard of her builders, the Delaware River Iron Shipbuilding and Engine Works, at Chester. The new steamship is 320 feet length over all, 312 feet molded length, 46 feet beam and 20½ feet depth of hold. The engines are of the triple-expansion type, with cylinders 28, 44 and 70 inches diameters by 48 inches stroke. There are six boilers 12 feet diameter by 11 feet 7 inches long, supplying steam at 160 pounds pressure. The new steamship will be fitted throughout with all the latest steamship appliances. There are at present six vessels on the ways at this shipyard, two of which are the gunboats Concord and Bennington, which will be shortly ready for launching.

Mexican capital is being offered freely for investment in banking schemes, indicating increasing confidence in the stability of the Government. A bank with $1,500,000 capital has just been opened in the City of Mexico, and the International Mortgage Bank is expected to go into operation in August.

The Connecticut Legislature at its recent session passed a law prohibiting the use of barbed-wire in divisional fences within 25 rods of the house or farm belonging to an adjoining proprietor without written consent from such owner.

The president of the Manitoba Railway, J. J. Hill, announces his intention of building several large and elegant steel passenger ships for the Northern Steamship Company, to ply between Duluth and lower lake ports, the first to be in the service during the next year.

The labor commissioners of 20 States convened in Hartford, Ct., and, accompanied by several manufacturers, Congressmen, State Senators and others, made a tour of inspection to the mills at Willimantic and Taftville.

The American Honduras Company, represented by E. W. Perry, of Chicago, have secured from the Government 1,000,000 acres of land 900 miles directly south of New Orleans, and have established the town of Pisano at the mouth of Patrica River.

From a paper recently read by Mr. Watts, of the firm of Sir W. Armstrong & Co., before the Institution of Naval Architects, we learn that the swift cruiser Piemonte, recently built at Elswick, England, for the Italian Government, is 300 feet long and 38 feet broad, with 15 feet mean draft, and has a displacement of 2500 tons. She has a protective deck, with sloping sides from stem to stern, which is 1 inch thick along the middle and 3 inches thick on the slopes. Her armament consists of six 6-inch quick-firing guns, six 4.75-inch ditto, ten 6-pounder Hotchkiss guns, six 1-pounder ditto, four 10-mm. Maxim guns and three torpedo-tubes.

According to an apparently authentic statement, 30,000 men employed on the Reading Railroad system have within the past 12 months turned their backs on the various labor organizations with which they have been connected for many years. Including over 25,000 miners on the Reading Coal and Iron Company's pay-roll who have left the Knights of Labor, the total number who have deserted their organizations will not fall short of 60,000. This result is in accordance with Mr. Corbin's policy, which requires that severance of all relations with labor organizations shall be the first qualification for employment on the system. Among those who have dropped their society connections are engineers, brakemen and conductors.

The works of the Manhattan Brass Company, at First avenue and Twenty-seventh street, were completely destroyed by fire on the 24th ultimo. The factory was a three-story and basement building erected nearly 25 years ago, extending for 70 feet on First avenue and 150 feet on Twenty-seventh street, and was filled with costly machinery and valuable brass goods. The fire is believed to have started in the boiler-room, before the workmen had arrived. The two watchmen on the premises lost valuable time in endeavoring to ex-

tinguish the flames before sending out an alarm, and such rapid progress was made by the flames that when the first batch of firemen arrived the fire had extended entirely through the upper floors of the building. The loss is estimated at $150,000, divided as follows: $40,000 on building, $50,000 on stock and $60,000 on machinery. The loss is said to be fully covered by insurance. Over 300 employees are thrown out of work. The company own the ground on the southwest corner of First avenue and Twenty-eighth street, on which they intend to build a new factory.

The ship-building yards of Great Britain are overrun with orders, being pressed with work as never before, and the large number of vessels built for foreign countries is especially remarked. The demand from various quarters is so great that further orders for new work are necessarily refused. The Clyde ship-builders have some 150 vessels, of an aggregate tonnage of 200,000, on hand, and yet the output of new work during the past few weeks has been considerably less than the contracts secured. On the Mersey the same state of affairs exists, and from Stockton it is reported that the good old times are rapidly returning. On the banks of the Tyne there are 80 vessels building, while at Sunderland, on the Wear, some 60 or 70 are in course of construction. Germany and Italy are among the best customers, while France finds that her bounty system is practically a failure.

St. Paul is to have a first-class manual-training school, and a contract for the erection of the buildings has already been awarded. The shop building will be fitted for all kinds of shop-work. In the basement there will be an engine-room, foundry and blacksmiths' shops; on the first floor a machine-shop; second floor, a wood-turning and pattern shop; third floor, a carpentry, joinery and wood-carving department. An elevator will be furnished to carry supplies from the basement to rooms above. When completed the school will cost about $50,000 and it will provide accommodations for 250 pupils.

Iron telegraph-poles and iron fence-posts are used in India on account of the destruction of wood by white ants. The telegraph-poles on many of the lines are hollow tubes of galvanized iron, about as big around as the average man's calf, so made that they fit into one another and form a pole about 10 feet high. To these poles the lines are strung, and many of the roads use such poles throughout their entire length. On other lines the telegraph-poles are T-iron rails, the same as those on which the car travels. Two of these rails are fastened together by bars about 1 foot wide and then this iron lattice-work is set deep in the ground and the wire strung upon it. About some of the stations the fences are made of such iron rails, and through hundreds of miles along one of the Rajah's railroads in Western India fences of barbed wire are seen, with sandstone posts. These stones are 1 foot wide and about 4 inches thick and 3 feet above the ground. The wires run through holes in them and they are said to be much cheaper than wood.

The British naval authorities believe they have secured plates absolutely impenetrable by missiles hurled by any gun at present invented. The discoverers of the secret are said to be two well-known firms —John Brown & Co. and the Beardmore Company—which are each casting a steel plate by the new process, 10 inches thick, for experimental purposes. They profess themselves perfectly confident as to the ultimate result of the test, which will be of an unusually exhaustive character and will take place at Portsmouth

MANUFACTURING.

Iron and Steel.

No. 1 furnace of Shoenberger & Co., Pittsburgh, which was banked May 25 for repairs, has again resumed operations. The rolling-mill and steel department of this firm closed down on the 1st inst. for the usual annual repairs.

Part of the stockholders and creditors of Brown, Bonnell & Co., of Youngstown, Ohio, are petitioning court to wind up the affairs of the firm, which have been in the hands of Receiver Brown since the failure in 1883

The Norton Iron Works, Ashland, Ky., have resumed in all departments. The furnace continues to make foundry iron of the high-silicon grades that have obtained considerable reputation for softness. Their Smith regenerator heating-furnaces are supplied with slack coal that costs but 2½ cents per bushel, and have given very satisfactory economical results.

From a recent issue of the Catasauqua (Pa.) *Dispatch* we take the following: "The weekly wages payment to 500 employees of the Catasauqua mills of the Catasauqua Mfg. Company is performed in less than an hour. The rolls are completed and the sums inclosed in envelopes, upon which is the name, number of employee and amount inclosed. The envelopes are arranged in numerical order in a large cabinet of 500 apartments, so that rapid work can be performed in handing the envelopes to the men. The employees form in a line in front of the office building and pass before the window, at which is seated the pay clerk with his rolls, and as each man passes in front his number is called and his name checked off. The cashier secures the envelope, calls the name and passes it to an assistant, who sees that the name corresponds with the man and hands the envelope to the employee, so that three witnesses can certify to the delivery of the same. The recognition and numbering of so many faces is a task of considerable difficulty, but mistakes are seldom made."

The Carbon Iron Company, of Pittsburgh, inform us that within the last two weeks they have completed the erection of two new heating-furnaces with 28-foot beds, thereby almost doubling their capacity. At present they are working on a large order for iron to be used in the new Merchants' Bridge at St. Louis. In order to fill this contract the firm have been compelled to turn away other work. They are also making some heavy universal plates from open-hearth steel for the Watervliet Arsenal, at West Troy, N. Y.

The New York capitalists who recently leased the iron-works of the Philadelphia and Reading Railroad Company, at Reading, have ordered Edward Gough, of Allentown, to build a complete mill for rolling steel into wire-rods exactly like the one which the Iowa Barb Wire Company are building.

The first concern to sign the Amalgamated Association scale for the coming year was the Maumee Rolling Mill Company, of Toledo, Ohio. The company attached their signature to it on Friday, the 28th ult.

The Andrews Brothers Company, whose extensive mills and blast-furnaces are located at Haselton, near Youngstown, Ohio, closed down their rolling-mill department on the 29th ult. for the purpose of taking an inventory of stock, making repairs and arranging the wage-scale with their workmen. They have at present under construction a new hot-blast plant for their Haselton furnace, which consists of three brick stoves of modern design, together with a draft-stack 160 feet high. When these improvements are finished the company will have one of the most complete furnace plants in the country. It is expected that the rolling-mill department will be put in operation again about the 15th inst.

The Chattanooga Mining and Manufacturing Company, composed of Chattanooga, Boston and Lynn (Mass.) capitalists, have purchased 2000 acres of manganese and brown hematite ore land adjacant to Tunnel Hill, Ga., 26 miles from Chattanooga, and have commenced mining the manganese. It is reported that the company will build a railroad to the mines, a 100-ton blast-furnace and works for manufacturing spiegeleisen.

The Phœnixville (Pa.) *Republican* says: "When the storm that wrought havoc in the Conemaugh Valley was committing its ravages, and while the Sunbury bridge was being rendered impassable by the sweeping away of three of its spans, a mass of ore was reposing quietly on the premises of the Phœnix Iron Company. That mass, after transmigrating through the works, is now at Sunbury, and within a month from the time the damage was done the structure will be again in condition for travel, as sound and strong as when first finished. The energy with which the affairs of the company are managed so pushed forward the work that within ten days from the time when the order was received the first span was completed. It was shipped on the twelfth day and was followed by two more on the nineteenth, all three being constructed at the works direct from the ore."

A Reading (Pa.) dispatch states that, commencing July 1, a number of the rolling-mill firms in the Schuylkill Valley will advance the wages of puddlers from $3 to $3.25 per ton. Among these firms are Potts Bros. and the Glasgow Iron Works, at Pottstown, and firms at Lebanon, Pottsville and other places. Three dollars was the lowest figure at which puddlers have worked since 1873, and this advance in wages is due to the better tone prevailing in the iron market.

The Everett Furnace, at Everett, Bedford County, Pa., has been sold to Joseph E. Thropp, of Philadelphia, who, it is stated, will soon put it in blast. The furnace has been idle since the failure of the Everett Iron Company It was built in 1883–4, and is 20 x 75 feet in size.

The Monongahela Furnace Company have decided to build two 20 x 80 foot furnaces at McKeesport, Pa. It is intended that the plant shall be a model in every respect. The work is to be executed under the direction of Frank C. Roberts, civil engineer, of Philadelphia, who will prepare all plans and specifications.

The old Lochiel Mill, at Harrisburg, Pa., now being operated by the Harrisburg Rolling Mill Company, has overcome all its labor troubles, and is now in full operation. The capacity of this mill is 140 tons of pipe-iron per day. The entire product is gathered up and loaded from the floor level, over the tops of the highest-sided gondolas, by a single Ridgway balanced crane. A Donaldson weigh-beam is attached to the crane, and the goods are loaded and weighed at the same time. One boy runs the crane and it is proving a wonderful labor-saver. The Ridgway balanced crane has also been introduced into the works of the Hartman Mfg. Company, at Beaver Falls, Pa.

Machinery.

T. S. Albrecht has resigned his position as president of the Eagle Machine Works, St. Louis, withdrawn from that establishment, and has formed a copartnership with A. Schellhorn, a machinist, having a shop on Collins street, under the firm name

of the Eagle Iron Works. They are fitting up new quarters on the levee, near Christy avenue. They have a contract for building a steamboat engine and overhauling an old one for a steamboat that is being built for the Missouri River trade near St. Joseph.

The Belden Machine Company, of New Haven, Conn., have an advertisement in this issue of their upright power hammer, which was illustrated in our issue of March 14. The advertisement shows a cut of their latest improved hammer, embodying improvements patented May 14 of this year. They claim for this hammer quite a number of advantages, among which are the following: It can be run at a very high speed; having neither cylinders, valves nor piston-rods, the repairs are trifling; it can be used on die work; it can be run with a belt at almost any angle; the anvil-block is separated from the frame; the ram is guided on both sides and can always be adjusted to run true with bottom die; it is perfectly balanced in every respect, and there is no jar or shock to the hammer when running. This hammer is furnished with the weight of the ram running from 20 pounds to 150 pounds, requiring power ranging from ½ horse-power to 4 horse-power, and adapted to work iron or steel from 2 inches and under up to 6 inches.

The Missouri Railroad Company, who operate the Olive street cable line, St. Louis, Mo., have just replaced the cable which has been running continuously since March 17, 1888, by a new one. The cable taken out made the remarkable time of 15 months and 10 days, a record for which the makers, Broderick & Bascom Rope Company, have just reason to be proud. The new rope, also made by Broderick & Bascom Rope Company, was placed in the conduit on the morning of the 27th ult. This line is not by any means a straight road, but has a number of sharp curves and steep grades, which makes the record of the rope all the more remarkable.

Collins-Gibbons Mfg. Company, St. Louis, Mo., report a large increase in their orders during the month of June. Among those lately received was one for a large size automatic straightener and wire-cutter, from Downing Machine Company, Erie, Pa.; also one for a small size machine for a concern in Leavenworth, Kan.

The Gautier Steel Department of the Cambria Iron Company, as is pretty well known throughout the trade, lost their entire plant in the recent flood at Johnstown, which also washed away everything in their mechanical engineer's office. They therefore request that builders of machinery of all kinds in their line furnish them with their latest catalogues. They will be glad to have these catalogues at once, as they are desirous of using them in rebuilding their works. Address the company at Johnstown, Pa., using the full title as above.

The works of the Superior Machine Company, at New Carlisle, Ohio, were destroyed by fire on the 16th ult. The building was a one and two story brick structure, and is virtually ruined, together with the machinery, including the engine and boiler. The detached frame buildings belonging to the company, including the warehouse, containing about 500 completed iron force-pumps, were saved. The total loss will foot up about $18,000 to $20,000. Insurance to the amount of $11,350 is carried upon the property destroyed. The stock saved in the warehouse will enable the company to fill immediate orders. The Superior Machine Company are composed of R. H. Rodgers, president; J. V. Perrine, secretary and superintendent of works; J. M. Winger, treasurer. The main office of the company was moved from New Carlisle to Springfield, Ohio, last November. The fire was the work of incendiaries. The company intend to take measures for the continuance of business.

Glenn's Boiler Works, in Duluth, Minn., have just gone into operation with a $25,000 plant, and the demands of business are such that their capacity must speedily be doubled. In the works will be over a dozen machines. The heaviest one is a 7-ton roller, used for bending heavy iron plates. The others embrace heavy shears that will cut a piece of steel ¾ inch thick, punching-machines, planers and lathes. The riveting-machine is swung on heavy chains, and a rubber pipe-connection furnishes the steam power. When in use one arm of the riveter is run underneath the boiler plate, the other arm being upon the outside. Six smith fires will also be kept going.

The mammoth sugar refinery of Claus Spreckels, of Philadelphia, is now being equipped with its apparatus. The steam plant consists of 30 Babcock & Wilcox boilers, which are located on the first and second floors of the building. Each boiler is fired by a pair of Roney mechanical stokers, making 60 stokers in all. The stoker plant, together with the complete coal-conveying apparatus, is put in by Westinghouse, Church, Kerr & Co., of New York, and is so arranged that the coal is handled mechanically, and without manual labor of any kind, from the time the car of coal is dumped until the ashes are shot into the ash vault. Mr. Spreckels has thus far contracted for 31 Westinghouse engines as a part of the power plant. Fifteen of these engines, each of 60 horse-power, are for driving the centrifugal dryers, each engine being coupled direct to its own dryer, dispensing altogether with line shafting. The investigations on the part of Mr. Spreckels, together with those of his architect and engineer, which led up to this arrangement, were unusually interesting and complete. An entire set of apparatus was shipped to the Westinghouse Machine Company, at Pittsburgh, together with a supply of raw sugar, and the necessary workmen. The plant, including the engine, was duly erected, and the processes gone through with and the sugar refined on the spot. The power required and its cost were thus carefully ascertained, and the order for engines was placed accordingly

The Steam Engineering Company, 704 Arch street, Philadelphia, are a new corporation composed of practical men, organized with ample capital for the purpose of undertaking as engineers, manufacturers and contractors any work in connection with steam and power plants, steam heating, either high or low pressure, direct or indirect, vacuum as well as fan system, mechanical ventilation, including the drying of different materials, removal of vapors, dust, gases, &c., the reduction of temperatures in engine and boiler rooms, &c. They are general agents for the Richmond Victor House-Heating Boiler, which can be seen in detail and at work at their office. House heating will receive special attention. H. C. Francis, formerly with Wm. Sellers Co., is president; S. A. Jellett, formerly with Philadelphia Exhaust Ventilator Company, manager; W. H. Francis, formerly New York agent for Wm. Sellers Co., secretary.

George D. Walcott & Sons, of Jackson, Mich., are now finishing for the Lansing Engine and Iron Works a ponderous shaper of capacity 4-foot stroke and 40-inch width and weight 3½ tons. They are also shipping to Boston a fine large shaper. They are now preparing to double their capacity.

Hardware.

Hussey, Binns & Co., Limited, the well-known shovel manufacturers, of Pittsburgh, report that their business for the six months of this year just closed was very satisfactory, but prices were extremely low. They have recently made several large foreign shipments, among which were two carloads to Australia and one to South America.

Lansing Wheelbarrow Company, Lansing, Mich., have recently bought out the truck business and stock of Byram & Co., Detroit, Mich., who will continue the manufacture of their furnaces, &c. The Lansing Wheelbarrow Company are erecting a brick machine-shop, 60 x 100 feet in size, to enable them to engage more extensively in the manufacture of steel-nose trucks.

The following, from a recent issue of the *Evening News*, Detroit, Mich., refers to the manner in which E. T. Barnum has succeeded in overcoming adverse circumstances and re-establishing his business in the face of exceptional difficulties. After referring to the misfortunes which overtook his company and the fire which destroyed his factory, leaving him without resources, it continues:

All this is widely known, but it is not known that Barnum, undismayed by the disaster and with resolute persistency, began life again in the old line on no cash capital, but with a wide acquaintance among dealers, men who knew his business worth and sterling qualities.

Single-handed he sat down and wrote a circular which was addressed to his old correspondents and customers, stating the facts in the case, the principal one being that he was flat on his business back, but still alive, and would be glad to have orders placed in his hands for filling, to which he would give his personal attention. In response he received a liberal share of orders, and in a short time business warranted the addition of more help. Gradually Barnum got hold of his old men who were thrown out of employment by the fire, and set them to work upon time orders in back rooms and niches provided for their accommodation. Then a new factory was erected, where he concentrated his men and entered vigorously into the manufacture of his special lines. Here he finally established his trade and pushed it with such vigor as to be able to offer inducements for the sale by the proprietors of the immense establishment of the National Wire and Iron Works, of which he becomes the sole proprietor to-day, an example of never-say-die worthy of the emulation of men.

Miscellaneous.

A deed, under date of June 1, has been recorded in Fayette County, Pa., conveying coke property to W. J. Rainey for the sum of $92,500. The seller is James Cochran. In view of the present condition of the coke trade this deed is especially noteworthy. The interest thus purchased was 57½ per cent. of the old Fayette Works, the first large coke plant in the Connellsville region, the deal being based on a valuation of $175,000.

The new buildings of the Minnesota Car Company, at Duluth, Minn., have been completed and the machinery for the different departments, rolling-mills, forge, foundry and erecting-shops is now being put in, and in a very short time the works will be engaged in the manufacture of cars to the number of 15 per day. The two large batteries of boilers are also in position.

The American Coppee Coke Oven and Coal Washing Machine Construction Company, Limited, have been organized at Pittsburgh to introduce into Allegheny County the Coppee coke oven. C. B. Vaughan, of that city, who is the managing director, recently returned from England, where he has been in consultation with Mr. Coppee, the head of the English company. Mr. Coppee is also chief stockholder of the American enterprise.

The Iron Age

New York, Thursday, July 4, 1889.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, JR., - EDITOR.
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS - - HARDWARE EDITOR.
JOHN S. KING, - - - - BUSINESS MANAGER.

Pittsburgh Office—Change of Address.

The Pittsburgh office of *The Iron Age* has been removed from 77 Fourth avenue to Room 511, Hamilton Building.

The Business Situation.

Students of the markets cannot fail to have noticed within the past three weeks the increased volume of business reported from every section. Dullness suddenly gave way to activity, and with the improved demand naturally came better prices. It is possible that the beginning of this improvement in trade antedated the great floods in Pennsylvania in the last week of May. That may have been the case, but it is very certain that the heavy demand for all classes of material to repair damages had much to do with the rapid development of activity. Yet the floods are not entirely to be credited with the changed condition of affairs, because a better buying movement also developed in the extreme Eastern and somewhat remote Western markets, which were wholly free from those influences. In some branches of trade prices have as yet been affected but slightly, owing to special circumstances, but the improvement bids fair to be general and to extend in time to even the most depressed products. At present the indications are strongly in favor of the settlement of the Western wages question without controversy so far as the manipulation of iron is concerned. Quite a large number of firms and companies operating iron rolling mills at Pittsburgh and vicinity, as well as in Ohio, have already signed the scale of the Amalgamated Association. Carnegie, Phipps & Co. signed for their Twenty-ninth and Thirty-third street works, Pittsburgh, thus indicating their desire to eliminate the question of antagonism to unions from the contest over wages at Homestead. This is food for encouragement, because a widespread disagreement over wages would necessarily demoralize trade if it continued any considerable length of time. The manufacturers of steel, however, are determined to effect a reduction in the wages schedule for their works, and important complications may arise in that direction whose end it will be difficult to foresee; but if moderation governs the councils of both sides there will be no prolonged disagreement. The advance in puddlers' wages in Eastern rolling-mills comes quickly on the heels of the improved demand for iron and is a gratifying indication of the willingness of employers to give their workmen the benefit of better times. The first six months of the year comprised a very trying period for iron manufacturers, among whom there were surprisingly few failures, and it is with much pleasure that we chronicle the more cheerful outlook now dawning for the last half of the year.

Cheapness of American Railroad Service.

Railway earnings are regarded to such an extent and have so much weight in business calculations as an index of the general prosperity that it becomes an interesting inquiry how far the charges for freight transportation at the present time are warranted and how they compare with charges imposed in former years. Especially is this inquiry pertinent to the grain-grower in the Far West, who finds himself excluded from competition in Europe, handicapped, as it were, by the producers of Russia, India and the Argentine Republic on account of the relatively higher prices prevailing at home. The grain-grower consequently clamors for lower freights, to assist in equalizing differences, in effect demanding that railway investors shall make good the losses directly attributable, in no small degree, to unconscionable speculators in Wall street and Chicago who have "boomed" prices by artificial manipulations—"pegged" them up, as the saying goes—far above the normal level. A statistician of undoubted standing who has carefully inquired into the subject of the costs of transportation for a period of 34 years has written an article for the *Tribune* of this city, setting forth some discoveries that may prove startling to the average Western business man.

The table below has been carefully prepared from the data so collected. The averages given in the first column are obtained by reckoning the rate each day for every year covered. The three trunk lines alluded to in the second column are the New York Central, the Pennsylvania and the Erie. The seven trunk lines in the third column are the same roads, with the addition of the Lake Shore, the Michigan Central, the Pittsburgh, Fort Wayne and Chicago and the Boston and Albany. The six Western lines in the fourth column are the Chicago and Northwestern, the Chicago, Milwaukee and St. Paul, the Chicago, Burlington and Quincy, the Chicago and Rock Island, the Illinois Central and the Chicago and Alton. All these roads are recognized as representative roads in every way. The table is as follows:

Year.	Grain rates per 100 pounds.	Receipts per ton per mile.		
		Three trunk lines.	Seven trunk lines.	Six West'n lines.
	Cents.	Cents.	Cents.	Cents.
1855	.....	2.778	.....	.....
1856	.....	2.758	.....	.....
1857	.....	2.709	.....	.....
1858	.....	2.294	.....	.....
1859	.....	2.117	.....	.....
1860	57.0	1.950	.....	.....
1861	.....	2.010	.....	.....
1862	.....	2.054	2.000	.....
1863	.....	2.257	2.220	.....
1864	93.6	2.513	2.590	.....
1865	110.6	2.920	2.900	3.642
1866	77.0	2.560	2.503	3.459
1867	73.7	.....	2.305	3.175
1868	80.1	.....	2.132	3.151
1869	54.1	.....	1.860	3.026
1870	48.4	.....	1.593	2.423
1871	53.0	.....	1.478	2.509
1872	58.5	.....	1.504	2.324
1873	54.6	.....	1.476	2.188
1874	47.7	.....	1.332	2.160
1875	40.1	.....	1.161	1.979
1876	30.1	.....	0.985	1.877
1877	33.9	.....	0.971	1.664
1878	29.1	.....	0.808	1.476
1879	25.1	.....	0.706	1.279
1880	32.7	.....	0.869	1.380
1881	23.5	.....	0.763	1.405
1882	23.7	.....	0.764	1.364
1883	26.0	.....	0.829	1.310
1884	22.7	.....	0.740	1.220
1885	21.8	0.654	0.636	1.158
1886	25.2	0.706	0.711	1.111
1887	26.2	0.712	0.718	1.014
1888	23.1	0.702	.....	.....

This table, it is claimed, presents more fully and accurately than any yet published the actual course of charges for transportation during the past 34 years. A summary of the causes of the various fluctuations is as follows: A great decline occurred after the panic of 1857, from which the railroads had not recovered, at least as to rates charged, in 1860 or when the Civil War broke out in 1861. From that point to 1865 the advance was nearly 100 per cent. on through freights for grain, but only 50 per cent. on the average for all freight. Within about four years after the war closed the rate had fallen lower than it was in 1860, and never again rose to that point except in part of a single year for grain. Thus it may be fairly said that as early as 1869 the railroads had returned to the specie level as to their charges, though they were paying more than 40 per cent. more for materials purchased than they paid in 1860, and so far as it is possible to compare wages, were also paying about 50 per cent. more for labor. Eastern rates and grain rates were reduced as early as 1879 about as far as they could be, leaving any profit to the transporting companies. In the reckless wars which then were waged the railroads showed the country that they were able to move freight at 25 cents per 100 pounds for grain from Chicago, and only 0.7 cent per ton per mile for all freght, and they have never since been able to establish and maintain rates substantially better than these. As soon as they secured better, by trunk-line pooling, new routes were opened and rival parallel roads were built, and new wars resulted. Grain rates went lower than ever; lower in 1881 and 1882, apparently, than the actual cost of transportation on some of the lines. Another settlement and peace in 1883 only brought more wars and sharper competition, which culminated in the lowest rates ever recorded. These were made in 1885, two years before the Interstate act was passed. Competition, then, cut off about two-thirds of the rail charges east of Chicago between 1869 and 1885, before the Interstate act was passed. By helping to destroy competition, the act has enabled the lines to get a little better rates, and to that extent has increased the cost of transportation to the people. But west of Chicago the trunk lines have reduced their rates since the act was passed from 1.111 cents per ton per mile in 1886 to 1.014 in 1887, and probably a little lower in 1888—the full returns having not been published as yet.

Passing to another view of this subject, an interesting comparison of the cost of operating American and English railroads has recently been published by an American engineer, Edward Bates Dorsey, which is in its way astonishing. Mr. Dorsey's investigations cover a period of five years, and were begun with the intention of showing American engineers that it was the best policy to build good roads at first, as the English do, and save in the cost of operating expenses. As he progressed in his inquiries, however, he was surprised to find that Americans were operating their roads much cheaper than the English, though American railroads are built probably at less than one-fifth of the average cost of English railroads. He found that the average freight charge on all freight moved in the United Kingdom

was about 1¼ pence, or 2.5 cents per mile per ton, but to be conservative he put in his comparison the average charge at 2 cents. He selected the five principal English railroads—namely, the London and Northwestern, the Great Northern, the Midland, the Great Western and the Great Eastern—and compared with them the Pennsylvania Railroad Company's main line, selected as representing the best-constructed American road, and the Knoxville branch of the Louisville and Nashville as a sample of the cheaply constructed class, both running through a comparatively rough country, with heavy grades and having most of their traffic in one direction. His table summarizing his investigations shows that the Pennsylvania carries from 162 to 245 per cent. greater tonnage in loads of freight trains than the English roads, while the Knoxville freight-train loads are from 96 to 157 per cent. greater than the English. The average charge for transporting one ton of freight one mile on the English lines is 200 per cent. greater than on the Pennsylvania and 120 per cent. greater than on the Knoxville. If the Pennsylvania charged the same freight rate as English roads its percentage of operating expenses to earnings would be but 21, instead of 63 as it now stands, while its gross earnings would show an increase of 545 per cent. The average cost of transporting one ton one mile is shown to be from 0.98 to 1.16 cents on the English railroads, against 0.426 cent on the Pennsylvania and 0.504 cent on the Knoxville.

Other comparisons are made by Mr. Dorsey, but the above are sufficient to show how greatly American shippers are favored with cheap transportation. Not only have American roads steadily reduced their freight charges until they are but a fraction of what they were in former years, but they are far below the rates charged on the leading English lines. If comparisons of the same sort could be made with the railroads of other countries, it is altogether probable that the same favorable conclusions would still be drawn with regard to American railroads. Nowhere else in the world can shipments of commodities be made by rail for such long distances at such low rates of freight.

Failure of the St. Lawrence Route.

Speaking of business on the Welland Canal, of which great things were expected a few years ago, Canadian papers are compelled to admit that the traffic results have proved disappointing. Millions of dollars were fruitlessly expended in enlargements and extensions, the supporters of the project being apparently oblivious to the fact that American rivals directly across the boundary of the province were sure to multiply railways until competition by water lines of transportation would be a vain attempt. The hope was indulged in that when the Canadian water-ways were completed the great bulk of the export grain trade from the American Western States would be diverted by the St. Lawrence route through Canada to the sea-board. So far from this expectation being realized, the maximum of traffic was reached in 1874, since which time the tonnage has declined. The aggregate was but 677,775 tons for the year 1888, as compared with upward of 1,078,000 tons at the former period. It is true, however, that last year the Welland Canal showed a gain in tonnage comparing well with that of the Erie Canal; but unfortunately for those who have been predicting great things for the St. Lawrence route and the export trade via Montreal, the improvement spoken of is merely in the transportation of corn in transit between ports in the United States. As tabulated by the Montreal *Gazette*, the decrease for 1888 as compared with 1887 on the several routes competing for the carrying trade to the sea-board is as follows:

	Tons.	Per cent.
New York railways	428,473	or 16.66
New York canals	387,215	or 25.72
Canadian Pacific and Grand Trunk railways	77,966	or 40.65
St. Lawrence canals	71,690	or 30.13

Singularly enough, in the face of this experience and while yet contemplating the sunken millions of pounds sterling, never to be recovered, the advisers of the Government persist in urging the necessity of still further expenditure in canal enlargement, more particularly between Lachine and Kingston, so that the largest class of lake vessels may be floated direct to tide-water without breaking cargo. Until this is done they despair of making any substantial headway against the United States in the export trade. It is not too late for Canada to wake up to a consciousness of the fact that water-ways are obsolete as against the "steam-horse." The Erie Canal, existing because it is protected by the State from railroad rapacity, is no exception to the rule. The admission of failure in the grand scheme of internal improvement so fondly cherished in the past by every local Canadian is doubtless profoundly humiliating. On the other hand, at this late day our neighbors evince a pluck and courage in respect of the great Canadian Pacific Railway worthy of the highest commendation. If frustrated in the one instance a round $100,000,000 more are staked in another endeavor to secure traffic, the Canadians apparently being not one whit dismayed.

Argentine Progress.

Of all South American countries the Argentine Republic has in every respect advanced most rapidly during the past 10 or 12 years. Much of the extraordinary progress made is due to the large immigration, enabling the Argentines to carry to a safe issue public works on a large scale; also to create colonies of agriculturists, favored by a fertile soil, on vast plains not encumbered with forests, but traversed by fine rivers; to expand the live-stock industry, wool-growing in particular; to go extensively into the cultivation of cereals, linseed and vines, and to build up cities now among the most populous and flourishing in South America. Wars and civil commotions have been avoided, Indians holding vast tracts of valuable lands have been subdued, and the lands thrown open to settlement by immigrating farmers. The climate being mild and healthy, great activity has been developed in nearly all branches of farming and industrial pursuits. The results which have been accomplished in a decade will be best appreciated by referring to what the country was in 1877 and what it had become in 1887, as shown in the following table:

	1877.	1887.
Foreign commerce, francs	460,057,000	1,178,470,000
Ocean navigation, tons	1,757,000	7,450,000
Soil tilled, hectares*	322,000	1,936,000
Value of crops, francs	99,150,000	347,875,000
Length of telegraphs, km	7,650	24,700
Railroads in running order, km	1,951	7,450
Immigration, number	36,000	138,000
Capital in banks, francs	189,235,000	680,000,000
Circulation of banks, francs	170,000,000	419,250,000
Income of the Republic, francs	86,120,000	322,946,000
Public indebtedness, francs	465,758,000	838,526,000
Annual interest of the debt, francs	45,043,000	75,036,000

* The hectare equals 2¼ acres.

The public wealth consisted on December 31, 1886, of the following items:

	Francs.
Lands and buildings	7,800,000,000
Live-stock	1,473,000,000
Banks	1,985,500,000
Railroads	927,400,000
Telegraphs	36,145,000
Custom-houses	48,925,000
Public works	160,970,000
Furniture, material, utensils, manufacturing plant, objects of art, &c.	1,330,990,000
Total	13,762,930,000

The Department of State at Washington recently received from the legation at Buenos Ayres the following information:

The chief of the Argentine Bureau of Statistics has prepared a tabular statement of the immigration to that Republic, which contains the following interesting facts: There were in the 32 years from 1857 to 1888, inclusive, 1,374,797 immigrants of a present population of only 4,000,000, while the immigration to the whole of South America during the same period was only 1,703,000. The largest proportion of this influx from any one country was that of Italy, which was over 65 per cent. of the whole. It is expected that the arrivals in the current year will reach 370,000, and the Argentine Government, anticipating difficulty from the large numbers arriving at once, has issued orders to its British agents to limit the departure to 200 a month, as it appears that many of the 2000 Irish who arrived in one day became dependent on public charity from insufficient preparation made for their arrival and from ignorance on their part that the public lands are nearly absorbed, except such as are held by speculators at prices beyond the reach of the funds of the emigrants. The Argentine Government is contemplating the repurchase of some of the public land in order to resell it in small lots to actual settlers. At present a private land corporation is offering land to immigrants near Bahia Blanca at $20 per acre on 20 years' credit, with 9 per cent. on deferred payment of the installments, the company agreeing to furnish seeds, tools, animals, provisions, &c., to the amount of $1000 during the first year at a fixed price, with interest as above.

The Argentine foreign debt at present amounts to $87,905,807 and the home debt to $119,097,974, making a total of $207,003,781. The annual interest payment involved by the former is $5,613,317 and by the latter $1,892,227. The income of the State last year was $57,651,711 and the outlay $50,801,631. There were last year 7706 km. of railway in operation, against 6742 in 1887, and there are this year building as follows: 668 km. of national railroads, 2074 on which the Government has guaranteed the interest on capital invested, 606 provincial and 1160 private lines without interest guarantee, making altogether 4508 km. in course of construction (100 km. equal 63 American miles).

In 1879 the Argentine Republic exported 238,634 bales of wool; in 1888, 318,124. The values of the various exports were as follows in 1887 and 1888:

	1887.	1888.
Wool	$32,479,315	$44,858,608
Dry hides	8,408,742	10,045,967
Sheepskins	6,698,408	5,608,013
Salted hides	3,639,095	4,569,155
Other animal products	4,767,933	5,975,248
Wheat	9,514,635	5,247,751
Indian corn	7,236,886	5,376,689
Linseed	4,060,409	2,131,813
Other cereals	456,211	472,295
Jerked beef	2,186,531	3,378,817
Tallow	788,777	2,138,888
Carcasses of sheep in refrigerator steamers	963,112	1,459,679
Ostrich feathers, &c.	774,325	1,032,046
Woods	330,214	760,546
Minerals	186,356	1,519,407
Nutria skins	609,843	461,011
Specie and bullion	10,712,565	10,232,532
Totals	$94,083,357	$108,249,465

The imports, including specie and bullion, were as follows:

	1888.	1887.
From England	$63,721,024	$39,500,897
Germany	29,115,010	12,019,925
France	27,781,425	24,016,910
Belgium	11,177,420	11,271,648
United States	9,934,544	10,998,811
Italy	7,732,410	6,995,104
Spain	3,902,370	4,994,095
Brazil	2,438,839	2,599,896
Holland	277,471	422,033
Sweden and Norway	84,183	30,562
Portugal	59,434	57,680
West Indies	2,169	5,942
Uruguay	8,873,895	8,110,360
Paraguay	1,724,394	1,590,530
Bolivia	211,360	532,983
Chili	25,312	15,898
Other countries	5,349,532	2,611,200
Totals	$172,410,747	$125,743,706

The amounts set against England are so large, because they include the large gold shipments made thence to Buenos Ayres. The American trade presents the following figures:

Calendar year.	Import into the United States.	Domestic export to the Arg. Rep.
1888	$5,465,893	$6,145,842
1887	4,977,013	5,911,027

In consequence of the extraordinary activity in building, the Argentine Republic has of late years been taking enormous amounts of American lumber. During the first ten months of the last fiscal year, for example, 99,180,000 feet were imported, against 72,078,000 during the corresponding period of the previous year. On April 30 a cargo was shipped from Portland, Maine, to Buenos Ayres, of 1,896,000 feet of spruce and pine lumber, valued at $29,868. It was with one exception the largest cargo ever taken by an American vessel. Agricultural implements and machinery are also extensively shipped hence to the Argentine Republic, especially mowing-machines, binders and horse-rakes. The trade is valuable and extending.

The Ohio Board of Health have recommended that all river water used for drinking purposes at points on the Ohio River be filtered and also boiled. As a result of this the Pasteur-Chamberlin Filter Company, of Dayton, Ohio, received orders in three days for over 500 Pasteur filters. The claim for this filter is that water is produced much purer than by boiling and boiling is dispensed with entirely. The company have now on file orders for 5000 filters, but will give precedence to orders from the region affected by the late flood at Johnstown, Pa.

The capital stock of the Simonds Rolling Machine Company, of Fitchburg, Mass., has lately been increased from $400,000 to $600,000.

The U. S. Steel Twin-Screw Gun-Boats.

With Supplementary Page of Engravings.

The engravings on the accompanying inset sheet show the principal features of the two steel twin-screw gun-boats Concord and Bennington, now being built for the Government at the Quintard Iron Works, N. F. Palmer, Jr., & Co., New York. The principal dimensions of the boats are as follows: Length on mean load water-line, 230 feet; breadth, extreme, 36 feet; displacement in tons, (nominal draft), 1700. The hull is built of steel, all plates being rerolled in order to remove surface irregularities. The outside plating has the following weight per square foot: Outer flat keel-plate, 15 pounds; inner flat keel-plate, 15 pounds; garboards, 15 pounds; remainder to deck, except strakes amidship, 14 pounds; above upper or main deck, 10 pounds. Up to the water-tight deck the plating is single-riveted at the edges. Above the water-tight deck, amidship, the plating is flush joined, single-riveted at the edge, the breadth of the edge strip being seven times the diameter of the rivet. All plates are double-riveted at the butts, with strips 11½ times the diameter of the rivets. For a length of 114 feet amidship an additional short strip, 12 pounds per square foot, is worked on the inside. In the wake of the torpedo-ports and main guns the plating is made up to a weight of 40 pounds per square foot for protection against main-gun fire. The boat is divided into compartments, and the boiler-room is made air-tight to provide for forced draft.

Each of the two engines has a high, intermediate and low pressure cylinder of 22, 31 and 50 inches diameter respectively and a piston stroke of 30 inches. The engines, as will be noticed on the accompanying drawings, are placed in separate water-tight compartments, the arrangement being such that the low-pressure cylinder is forward in the forward and aft in the after compartment.

The main steam-valves are of the piston type; those of the high-pressure cylinders are of cast-iron, the others being of composition. There is one valve for the high-pressure, one for the intermediate and two for each low-pressure cylinder. The valves are worked by a radial valve-gear, and are arranged for a minimum cut-off of 4 per cent. of the stroke in the high-pressure and 5 per cent. in the intermediate and low-pressure cylinders. The cut-offs of all the cylinders are capable of being adjusted independently of each other. The movement of each valve is regulated by a reversing-arm and a radius link. Each engine also has a steam reversing-gear.

The pistons are of steel, 2¼ inches thick at the center and 1⅝ inches at the periphery, and each is provided with an adjustable cast-iron wearing-shoe. The piston-rods are of steel, 3¾ inches in diameter. The cross-head runs in guides, bolted to the cylinder at one end and to the bed-plate at the other end. Each cross-head is fitted with cast-steel slippers, lined with white metal. The connecting-rods are of wrought iron, 64 inches between centers, 4½ inches in diameter at the crank-pin neck and 3¾ inches in diameter at the cross-head neck.

The crank-shafts are of forged steel, fitted with cranks at equal angles and with the necessary coupling-disks forged on. The crank-webs are 6½ inches thick, except the after one of each engine, which is 7¼ inches thick. The crank-pins are 9 inches in diameter and 10 inches long. The webs are shrunk on both shaft and pins and keyed. The shaft journals are 9 inches in diameter and have a total length of 68 inches for each engine. The crank-shaft boxes are of composition, with steel caps, both lined with white metal. The castings containing the crank-shaft bearings are cast-steel in one piece for each engine. They are bolted to engine keelsons and stayed to the cylinders by tie-rods and the guides.

In the forward engine-room is a centrifugal pump, driven direct by its engine, and arranged for freeing the ship from water in case of necessity. The air-circulating and bilge pumps are driven independently of the main engines. Each circulating-pump is arranged with bilge as well as sea injection, and with a suitable by-pass valve. Each air-pump delivers into a feed-tank placed in the forward engine compartment. This tank has a capacity of about 300 gallons, and is partitioned and fitted as a filter. The shells of the condensers are cylindrical and made of brass. They are fitted with brass tubes ⅝ inch in diameter outside, and each has a cooling surface of about 2450 square feet measured on the outside of the tubes. The tubes are placed fore-and-aft, and the water can circulate through them and hence overboard through outboard delivery-valves. There are also two vertical duplex pumps fitted in each fire-room of ample capacity for feeding the boilers. One set in each fire-room is fitted to draw from feed-water tank and bottom of forward condenser and discharge through the boiler check-valves. The second set in each fire-room is fitted to draw water from the tank, sea, bilge and boilers, and discharge into the fire-main through the boiler-checks and overboard.

There are four cylindrical horizontal tubular steel boilers, containing an aggregate grate surface of 220 square feet, arranged fore-and-aft in two water-tight compartments, each with a fire-room athwartship and abaft the after boilers and forward of the forward boilers. Each boiler is 9 feet 9 inches in diameter and 17 feet 6 inches long. The shell is $\frac{13}{16}$ inch thick. The top of the smoke-pipe is about 55 feet above the guards. The fire-rooms are arranged to work under air-pressure and each is fitted with two blowers, capable of constantly supplying sufficient air for the horse-power. The boilers will carry 160 pounds pressure.

The line shafting is of steel, 9 inches in diameter; one shaft is 27½ feet long, and the other is 7½ feet long, and each has a 4-inch hole bored through it. The propeller-shafts are of steel and are formed of two lengths, the forward one being 22 feet 7 inches long and from 9½ to 9¾ inches in diameter, and the after one 28 feet long and 11½ inches in diameter. The former has a 4-inch axial hole and the latter a 7-inch hole reduced to 4 inches at the after end. The steel tubes for the reception of the propeller-shafts are located on each side of the ship, as shown in the plan view. The forward tubes are built in the framework, which is bossed out in a suitable manner to support the forward ends of the after tubes, their after ends being supported by struts. The propellers are of manganese bronze, 10½ feet in diameter, with adjustable blades, right and left hand.

The distilling apparatus consists of one evaporator and distiller capable of furnishing 2000 gallons of potable water in 24 hours. The vessels will be lighted throughout by electricity.

The death of Miss Maria Mitchell, which occurred at Lynn, Mass., on the 28th ult., removes from scientific circles one of the most eminent women of the century. She was an astronomer of world-wide fame, inheriting her taste for the study of the heavens from her father, William Mitchell, who was noted for his attainments in that direction. She was born at Nantucket in

1818, and as early as 1847 she received a gold medal from the King of Denmark and a copper medal from the Republic of San Marino for discovering a comet. When the publication of the American Nautical Almanac was begun Miss Mitchell was employed to do certain work for it, and this she continued until her appointment in 1865 as professor of astronomy at Vassar College, which position she retained until January, 1888. Miss Mitchell was the first woman to be elected to the American Academy of Arts and Sciences. In 1875 and 1876 she held the presidency of the American Association for the Advancement of Women. The American Association for the Advancement of Science elected her a member in 1850 and a Fellow in 1874. The degree of LL.D. was conferred upon her by Hanover College in 1852, and by Columbia in 1887. She was untiring in her work, and discovered seven comets besides the one first seen in 1847. In recent years she gave special study to sun spots and the satellites of Jupiter.

Metallic Railroad Ties.

The Department of Agriculture has published a very interesting summary of information concerning the use of metal ties as a substitute for wood in the construction of railways. Although the Department of Agriculture is not directly concerned with the management of railroads, this investigation comes legitimately within its province, since it is in the interest of forest preservation. E. E. Russell Tratman, civil engineer, who made the report to the Department on this subject, says: "It has always seemed to me surprising that American engineers, who are usually in the van of any great step in the profession, should have paid so little attention to this important matter—important both as to the financial economy and the practical efficiency of the track. In my opinion steel ties should be used as the standard for first-class track, and not merely as a substitute for timber when the latter becomes scarce or expensive."

Experiments with steel ties have been made in England for several years, but with unsatisfactory results, owing to the form of the rail used. The most extensive and valuable trials have been made in Holland under the direction of J. W. Post, engineer of permanent way of the Netherlands State Railway Company, who began his experiments in 1865 and has continued them until the present time. The steel tie designed by Mr. Post and improved by him from time to time in the light of practical experience has been adopted upon this system. In the early part of 1888 91 miles of track had been laid with these ties. Of 10,000 ties laid in 1865 9550 were still in the track in 1888 and were expected to last 20 years more, although they were of the earlier type of the tie which has since been improved upon. As to breakages, out of 162,634 ties laid not one had broken. In the early part of 1888 there were in use in various countries about 730,000 ties, or 36,500 tons, of this one type.

On the State railways of Germany a number of different systems of metal track have been tried for several years. In 1887 the State railway system had 3131 miles laid with metal cross-ties and 2399 with metal longitudinals, making in all 5530 miles of metal track. The experience with iron longitudinals and cross-ties was very favorable, but still better results have been obtained since steel was introduced. Wooden ties are still used in great numbers, partly on account of their lower first cost and partly on account of the policy of the German Government to keep up the supply of timber by domestic cultivation and forest management.

Austria has about 200 miles of longitudinal systems of metal track which have been laid in small sections, year by year, since 1876. In Switzerland the Central Railway had 100,000 metal ties in use at the end of 1884, and proposed to lay 30,000 per annum till its whole system had been thus laid. The Western and Simplon railways began using metal ties in 1883, and have been very well satisfied with them. The Gotthard Railway uses them very extensively, and they have also been adopted on the Mount Pilatus Roch Railway.

In India 300 miles of the State lines are laid with steel ties, and there are over 1600 miles laid with cast-iron track of different types. In Queensland, Australia, a few miles of railway have been laid with the Phillips type of metal tie. This is a steel cross-tie intended for prairie work, where the track is laid on the surface of the ground, and is designed to be used without ballast, being simply packed with surface soil. In the Argentine Republic the Buenos Ayres Great Southern Railway, which began operations in 1865, has 13¾ miles of double track and 819½ miles of single track laid with cast-iron sleepers. The Central Argentine Railway has 246 miles laid with cast-iron track. The American inventor has not been idle, although his labors have not found favor with engineers. From 1839 to February, 1889, no less than 256 patents for metal track were issued. Among the American railroads which are reported as having made experiments with metal ties are the Boston and Maine, the Maine Central, the Long Island, New York Central and Pennsylvania.

B. E. Fernow, the chief of the Forestry Division of the Agricultural Department, sums up the situation as follows: "With the extended experience before us there cannot longer be a doubt that it is possible to construct a metal tie which will be superior in all respects to wooden ties; yet to bring its first cost down to such a figure that the future saving in its maintenance need not enter into consideration, but may be taken as an agreeable surprise in the cost of management, is what railroad companies are most bent on obtaining. Especially in our country, where the present accounting outweighs in importance all future possible profits, this consideration alone, of reduced first cost, may be sufficient to work a revolution in the use of railroad ties. On the other hand, the bugbear of cheapness, which is often mistaken for an equivalent of economy, is apt to mislead the inventor into risking the factors of safety and strength in order to attain cheapness."

How the Hotchkiss Guns are Put Together.

There is in Hartford to-day (says the *Courant* of that city) no more interesting work in progress in any of the large factories than that at Pratt & Whitney's, in connection with the manufacture of Hotchkiss guns for the navy. One of the most interesting processes in the work is that of shrinking these guns into their jackets, the jacket being that part of the breech which carries the trunnions and the breech-loading chamber. For the past week the company have been engaged in shrinking on the jackets of the 6-pounders. The jackets, which have been made with the utmost care, are of steel, about 3 feet in length, bored to receive the hollow tube through which the projectile must pass. This tube is $\frac{4}{1000}$ inch larger in diameter than the hole in the jacket into which it must be inserted. The jacket is placed on a solid base and is then subjected to heating by a system of gas-jets arranged all around it. Experience shows that it requires about half an hour of heating to properly cook the jacket, the first 15 minutes being devoted to heating the lower and thicker part, while during the last 15 minutes the heat is applied to the whole surface. A few minutes before the half-hour is up tests are made with a gauge to ascertain if the jacket has expanded sufficiently, it being essential that the heat shall not be sufficient to discolor the iron. As soon as the gauge shows a sufficient expansion the long steel tube which constitutes the barrel of the gun is swung into position directly over the hole in the jacket and is then lowered into place. If everything is all right the tube (or barrel) is lowered, and its own weight carries it into its proper place in the jacket. If any mistake in calculation has been made the tube will get choked in the jacket and the work is a failure involving a large loss. The preliminary experiments have been so nicely made thus far that such a disagreeable experience has not been had.

But the work is not yet a success. To insure the perfect fitting of the jacket on the tube it is necessary that the tube should cool more rapidly than the jacket. Naturally the exterior would cool first, which would make the jacket expand and fit loosely around the tube. To prevent this the base of the hollow tube is plugged, and by a simple arrangement a stream of cool water is run through the tube from the moment of its insertion into the jacket. The result is that the first shrinkage is in the tube, and the jacket, shrinking later, fits on the tube as closely as though they had been cast in one piece. This is, in brief, the description of a process which requires the utmost skill in all the preliminary work, from the casting of the steel to the heating of the jacket. Everything is done in accordance with mathematical rules, involving the nicest figuring and the most scientific knowledge of the treatment of steel. Thus far 11 guns have been put into their jackets without an accident, six of them being 3-pounders and five 6-pounders. The latter are 7 feet 6 inches in length, weigh 805 pounds, have a caliber of 2.24 inches, will stand a powder pressure of 20 tons to the square inch, will shoot accurately 3½ miles, and will penetrate 4 inches of steel armor. They can be fired 15 times a minute if necessary. Up to the present time no Hotchkiss guns of larger caliber than the 6-pounders have been made in this country, but it is probable that 33-pounders will soon be put on the works. The work at Pratt & Whitney's, of which a mere outline has been given, is the most important big-gun work now in successful operation in this country. It is conducted with such skill that it is probable orders will soon be issued to properly equip all the vessels of the navy. This ought to result in lively times for several years at the Hartford factory.

The Mexican National Railway will have the immense car-works and machine-shops at Laredo, Texas, completed within 60 days. The buildings are constructed of Laredo brick, with iron truss roofs. The total cost of this plant will be over $600,000 and it will employ over 1000 workmen. On the completion of these machine-shops the machinery now in the shops at Corpus Christi, Texas, and New Laredo, Mexico, will be removed to Laredo. It is the intention of the National to concentrate in that city the entire work of their system from the City of Mexico to Corpus Christi, Texas. During the past 18 months enterprises have been inaugurated in the same city involving millions of dollars of Northern and Eastern capital, which has been attracted to Laredo by its abundance of raw material, cheap labor, superior coal and fine water-power, by the possession of which it is destined to become a great manufacturing city.

TRADE REPORT.

Chicago.

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, July 1, 1889.

Pig-Iron.—Buyers of Charcoal Iron were quite active in placing orders last week. It is said that the aggregate sales in this market would be about 20,000 tons. Many of these orders cover from six to twelve months' deliveries. Since sales agents have stopped shading prices sales are more easily effected and inquiries increasing. The market for all classes of Iron is firmer and some of the Charcoal and Coke Iron furnaces have virtually withdrawn from the market by advancing their prices 50¢ ₱ ton above our quotations. There is not the same desire to sell local Coke Irons ahead that there was some weeks ago. Furnaces have under contract for delivery during the next three months from two-thirds to three-fourths of their product, and the consumers who buy in small lots and carloads will be subject to the fluctuations of the market. Iron producers anticipate a higher range of prices and the indications are that they will be realized. Consumption was materially increased last month. The same ratio of increase during July will absorb the extra surplus stocks and remove the necessity of forced sales. Ohio and Southern brands of Softeners are about the only outside Irons that have been sold in any quantity in this market for some time. These Irons are subject to less shading and are offering in smaller quantities. We make the following quotations, cash, f.o.b. Chicago: Lake Superior Charcoal, all numbers, $18 @ $19; Local Coke, No. 1, $15.50; No. 2, $14.50; No. 3, $13.50; Chicago and Bay View Scotch, $15.50 @ $16; American Scotch (Blackband), $17.50; Southern Coke, No. 1 Foundry, $15.50; No. 2, $15; No. 3, $14; No. 1 Soft, $14.75; No. 2, $14.25; Gray Forge, $13.25; Mottled, $13; Hanging Rock, No. 1, $18; Jackson County, No. 1, $17.50, immediate delivery; Tennessee Charcoal, No. 1, $17.75; Alabama Car-Wheel, $24 @ $25.

Bar-Iron.—The market has every appearance of being firmer, but lacks the solidity necessary to convince the unbeliever. Prices are about as irregular as the quality and finish of the Iron, and the specifications for which it is intended. Common Bars for Merchant trade are quoted at $1.60, half extras; Single Refined, $1.75, and Double Refined, $1.85, f.o.b. Chicago, regular terms. The low-priced mills are not making such liberal concessions, and all makers of Common and Single-Refined Iron come nearer to selling at the same figures than they have for several months. The approaching uniformity in price is regarded as an important feature, and is the chief basis for the claim that the market is firmer and improving. Small lots from store are quoted at $1.70 for Common; $1.85 for Single Refined, and $1.90 for Best Refined.

Structural Iron.—The foundries that have been making the very low prices on cast shapes have either got all they want or are figuring higher, because several firms who say they figured at cost before and were beaten have been getting some good contracts recently at fair prices. The visible amount of work is increasing, and it now looks as if there would be plenty of work for the next six months. Quotations are f.o.b. Chicago as follows: Angles, 2.10¢ @ 2.12½¢; Universal Plates, 2.15¢; Sheared Plates, 2.20¢; Tees, 2.55¢; Beams and Channels, 2.90¢. Small lots from store: Angles, 2.20¢ @ 2.30¢; Tees, 2.65¢ @ 2.70¢; Beams, 3.40¢

Plates, Tubes, &c.—There is a fair business being done. Consumers of these materials confine themselves to small lots, on which prices are steady at the following quotations: Nos. 10 to 14 Iron Sheets, 2.60¢ @ 2.70¢; Nos. 10 to 14 Steel Sheets, 2.75¢ @ 3¢; Tank Iron, 2.40¢ @ 2.50¢; Tank Steel, 2.50¢ @ 2.60¢; Shell Iron or Steel, 3¢; Flange Iron, 4¢; Flange Steel, 3.50¢; Fire-Box Steel, 4.75¢ @ 5.50¢; Ulster Iron, 3.75¢; Boiler Rivets, 3.75¢ @ 4.25¢; Boiler Tubes, 55 % off for 1¾-inch and less and 60 % off for 2-inch and larger.

Sheet-Iron.—Jobbers' stocks are in good shape, but the unusual demand last month caused some to seek for additional supply. Mills were reticent about naming prices for early delivery, and asked from $\frac{1}{10}$¢ to $\frac{2}{10}$¢ advance on May prices. Makers' prices on No. 27 range from 2.90¢ to 3¢, f.o.b. Chicago. From store jobbers quote No. 24 at 3¢; Nos. 25 and 26 at 3.10¢, and No. 27 at 3.20¢.

Galvanized Iron.—In small lots from store trade is pretty good and prices unchanged. Dealers quote 65 % off on Juniata and 65 % and 5 % off on Charcoal. Low-grade Sheets are quoted at 70 % discount by some makers.

Merchant Steel.—There is no material change in the condition of the market. Trade in small lots was quite as good as during the early part of the month, but large buyers are evidently waiting until after the 4th of July before placing orders for round lots. Manufacturers quote f.o.b. Chicago, in round lots, Open-Hearth Machinery Steel, 2.10¢; Tire Steel, 2.15¢; Toe Calk, 2.20¢; Spring Steel, 2.25¢; Soft Steel Bars, 1.90¢; Open-Hearth Plow Stock, 2.50¢; Crucible Plow Stock, 3.50¢. The following prices are made by jobbers from store: Mixed Machinery Steel, 2.10¢ @ 2.30¢; Tool Steel, 7.75¢ @ 8.50¢; Specials, 12¢ @ 25¢; Crucible Spring Steel, 3.50¢ @ 3.60¢; Open-Hearth Spring, 2.50¢; Open-Hearth Machinery, 2.50¢ @ 3¢; Bessemer Machinery, 2.30¢ @ 2.40¢; Sheet-Steel, 7¢ @ 10¢; Tire Steel, 2.20¢ @ 2.25¢.

Steel Rails.—The Illinois Steel Company recently concluded a contract with the Denver and Rio Grande Railroad for 25,000 tons, which will be used for replacing their narrow-gauge track as fast as the Rails can be delivered. Other orders of 1000 to 5000 tons are pending. The mills are full of work for July and August, but would be able to fill in small lots for September and later. Prices range from $29 to $30 for Heavy Sections, according to time of delivery; 30-lb Rails are quoted at $33; 12 to 20 lb Rails at $1.75 @ $1.80 lb 100 lb. For both Light and Heavy Sections the demand is increasing for late deliveries.

Track Supplies.—In comparison with the condition of the Rail market the demand for these articles is remarkably light. Prices remain steady as follows: Splice-Bars 1.55¢ @ 1.60¢; Bolts with Square Nuts, 2.50¢ @ 2.55¢; Hexagon Nuts, 2.60 @ 2.70¢; Spikes, 1.85¢ @ 1.90¢; Hot-Pressed Square Nuts, 5.85¢ discount; Hexagon Nuts, 6.35¢ discount.

Old Rails and Wheels.—There continues to be quite an active demand for O'd Iron Rails. Consumers who could not avoid buying them have been forced to pay from $21 to $21.25 for such lots as they could pick up. Rails are scarce, and on one or two lots in the market sellers are asking $23 @ $24. Old Steel Rails are quoted at $16.50 @ $17 for long lengths and $14 @ $14.50 for short pieces. Old Car-Wheels have met ready sale at $17.75 @ $18. Sellers are asking from $18.25 to $18.50, and always keep about 25¢ @ 50¢ ₱ ton above the point at which they can be bought. The market looks firmer, and on some 4000 tons that are on hand sellers are asking $20.

Scrap.—There is considerable demand for No. 1 Mill at prices 50¢ @ $1 a ton less than dealers are willing to take. Stocks is scarce and buyers who must have the stuff will be compelled to pay what is demanded. There is no great demand for the other grades. Dealers' quotations on a ton of 2000 lb are as follows: No. 1 Wrought, $17.50; Fish-Plates, $18; Car-Axles, $21.50; Horseshoes, $17; No. 1 Mill, $14; No. 2 Mill, $8.50 @ $9; Cast Machinery, $11; Stove Plate, $8.50 @ $9; Cast Borings, $8; Wrought Turnings, $10; Coil Steel, $13.50; Leaf Steel, $14.50; Locomotive Tires, $15; Track Scrap, $16; Mixed Country Wrought, $12.

General Hardware.—Trade for the month of June has been very surprising. Jobbers report that they had a larger business last month than they ever had for any similar period. This does not appear to be the case with every man in the business, but it certainly does with the leading houses. The Heavy Hardware trade has also been very good and considerably in excess of business done during May. The recent advances in price by manufacturers are being maintained and less cutting for orders reported.

Nails.—Many of the manufacturers have become disgusted at the unremunerative prices at which Nails have been selling in the last month and withdrawn from the market by holding their product so much above prevailing figures that no sales are made by them. The number of manufacturers who are willing to meet prices has materially lessened in the last week, and throughout the market appears to be firmer, without any realization of the fact. Jobbers are quoting mixed cars of Wire and Cut Nails or exclusively Cut Nails at $1.85 rates and $2.30 for Wire. From store small lots of Wire Nails are quoted at $2.35 and Cut Nails at $1.90. Some manufacturers of Wire Nails are disposed to make slight concessions on large orders. No transactions of importance are reported.

Barb-Wire.—The demand has fallen off considerably in the past week and the small-lot trade is all that is left, and there is not much of that. Stock in the hands of jobbers is pretty well exhausted, and factories have been running on orders for some time. Prices are reported steady at 2.75¢ for Painted and 3.35¢ for Galvanized in all quantities.

The Minneapolis Furnace of the York Iron Company, at Black River Falls, will go out of blast shortly after July 1, in order to reline and repair the furnace.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., July 1, 1889.

The first half of the year has been a most trying one to manufacturers, prices of nearly all kinds of Iron having touched the lowest point on record, considering cost of production. In other words, manufacturers have had the hardest time within their experience to get back a new dollar to replace the old one. The position is even yet a complicated one, but the tendency is toward improvement, and it is hoped that the last half of the year will at least enable the trade to make a fair average showing. As regards

Pig-Iron—The movement for the present is decidedly in sellers' favor. The demand is heavy, and with light stocks prices are firm with an upward tendency. The opening prices in January averaged $16, $17.50, and $18.50 for the three grades, but the market soon became heavy, and prices steadily weakened, dropping little by little until May, when $14.50,

$15.50 and $17 became ruling quotations —a total decline of about $1.50 ₱ ton. A few leading brands failed to sympathize in the decline, but ordinary quotations were about as stated. During the last week in May prices began to improve, and although the advance is not important, it is 50¢ to 75¢ per ton, and looks like being permanent. Gray Forge to-day is held at from $15 to $15.50, delivered, No. 2 Foundry at $16 @ $16.50, and No. 1 at $17 @ $18. There is very little good No. 1 to be had at $17—the usual quotation being $17.50, and from that to $18 for choice brands. Southern Irons exercise more or less of a disturbing influence, owing to the irregularity in quotations and the uncertainty in regard to the supply. Occasionally they seem to be entirely out of the market, when all of a sudden bids for large lots are solicited, as though sales were to be forced regardless of price. Practically this is not the case, and as a rule the prices realized are not materially different from those obtained for .ocal brands when quality, delivery and ther disadvantages are taken into consideration. All the same, it is not easy to determine the time or the exact amount of competition to be expected from this source, while the figures usually named appear to be very low compared with those for local brands. At this writing Southern Gray Forge is offered at $14.50, ex-ship, and No. 1 Foundry at $16.50, with intimations that concessions would be allowed on prompt bids from the right kind of buyers. Others who have been prominent sellers of Southern Irons in this market have nothing to offer, their entire product being engaged for some time to come; hence it may not be entirely safe to count on heavy supplies from the South. Taking everything into consideration, there is a feeling that the supply from all sources will not be in excess of consumptive requirements, and may be sufficiently below that to cause a further stiffening in prices. The current output of Pig-Iron (Coke and Anthracite) is estimated at about 126,000 tons per week, as against 142,000 tons six months ago and 107,000 tons a year ago. In view of the fact that consumption is increasing, and stocks very much reduced, it is not improbable that some little scarcity will be felt if the demand keeps up as it promises to do. A good deal will depend on crop reports during the next 30 days. Recent advices have been less favorable than they were two or three weeks ago, and while these may have been "doctored" in some measure for stock-jobbing purposes, the trade will be inclined to hesitate until the facts are definitely known. But on the whole the outlook at the commencement of the last half of the year is believed to be more favorable than at any time during the first half, and all that is required to confirm that impression is definitely favorable news in regard to the crops.

Manufactured Iron.—Business during the past six months has been the reverse of satisfactory, both as regards price and demand. Bars have suffered more than anything else. Starting in at 1.85¢ in January, prices steadily drooped until 1.70¢ @ 1.75¢ became ordinary quotations, while Western Bars were sold in some cases at nearly a tenth below these figures. Early in the year the demand for Skelp gave strong support to the Bar mills, but with the failure of the Reading Iron Works prices became still weaker and so irregular that they were hardly quotable. During the past four weeks a better feeling has prevailed, and prices are comparatively firm at 1.75¢ @ 1.80¢ as a minimum, and from that to 1.85¢ for the best-known brands. The advance is not in proportion with other specialties, but there is some probability of a more active movement later on. Skelp Iron has also been considerable of a disappointment, although it is said that some unusually large contracts are in progress of negotiation, which when closed will require many thousand tons of Skelp. Grooved is about 5¢ ₱ 100 lb above the lowest and Sheared 10¢ better. The demand for Plates has been pretty heavy during the entire six months, but, in sympathy with other departments, prices were very weak during the first four or five months, declining a full 20¢ ₱ 100 lb, which, however, has been more than recovered during the past 30 days. Sheets have been in steady demand during the entire half year, and, while prices have been somewhat irregular without being quotably lower, they are now steady, with a tendency toward higher figures. Taking everything into account, it may be said that prospects for the last half of the year are very favorable, more so, in fact, than they have been for a long time. Bars and Skelp ought to be at least a tenth higher, and if the demand comes to carry prices to their proper level other specialties will doubtless move sympathetically. The next couple of weeks will probably settle the question one way or another.

Steel Rails —The half-year just closed has not shown much change, prices to-day and on the 1st of January being the same, viz., $28 at mill. Sales during that period, however, will not average over $27, as during the greater portion of the time competition was very close, Pittsburgh and Scranton frequently quoting less than $27 for desirable orders, and it is understood that less than $26 was accepted in one or two special cases. There is a decided change of tone, however, and while no very large sales have been made at $28, it is quite certain that even $28 would be considered a very inside figure to-day, $28.50 @ $29 being nearer to manufacturers' ideas of value under present conditions. The quantity sold to date does not vary much from that of the preceding year, but there is this difference—prices are on the up grade, while they were just the reverse a year ago. Inquiries are numerous and it is believed that $30 will be reached before the end of the year, providing nothing unforeseen occurs to interfere with the present outlook as regards crops, &c.

Cleveland.

CLEVELAND, July 1, 1889.

Iron Ore.—About 70,000 or 75,000 tons of Bessemer Ore have been sold during the past week. Menominee Bessemers command $4.50 @ $4.75 and Gogebic Bessemers about the same figures. High-grade Gogebics are held at $5 @ $5.15, the owners of the Aurora refusing to dispose of any more Ore at $5. Bessemer Hematites at $4.50 are in fair demand and the whole market has an active appearance and healthy tone. The receipts of Ore at lower lake ports already exceed 2,100,000 tons, against 1,100,000 tons at the corresponding time last year. Over 66,000 tons of Ore were unloaded at Cleveland last week and 33,000 tons sent forward to the furnaces. For the same week last year the receipts were 43,000 and the shipments 16,900 tons. Ore representatives estimate the total sales for the season at 4,150,000 tons and prophesy that they will exceed 6,000,000 tons. The Carnegies are said to be between 30,000 and 40,000 tons short of their required supply. Many furnaces in the Mahoning and Shenango valleys have bought but sparingly. Efforts to force up lake freights have been abandoned and it is not improbable that single-trip charters will be made until the close of navigation at 90¢ from Escanaba, $1.10 from Marquette and $1.25 from Ashland and Two Harbors. It is now conceded that a reduction in freights is more probable than an advance.

Pig-Iron.—The market has been fairly active, although the custom of taking the semi-annual inventories of the mills in July has had the effect of slightly curtailing orders. It is believed, however, that the reduced sales will be more than counterbalanced by the improved demand looked forward to after July 15. Prices are certainly firmer if no higher. Bessemer Iron is in very good favor. The outlook is everywhere considered excellent —a statement fully verified by the fact that furnace men are still buying Ore in liberal amounts at about the same prices prevailing one year ago, when Pig-Iron quotations were much higher.

Scrap-Iron.—Old American Rails are plentiful and scattering sales at $21 are reported, although $21.50 is the nominal price. Old Wheels are not in much demand at $19.

Cincinnati.

Office of *The Iron Age*, Fourth and Main Sts. CINCINNATI, July 1, 1889.

Pig-Iron.—There has been a fair volume of business in Pig-Iron during the past week, and a firm tone has prevailed. In not a few instances higher prices have been obtained, and at the old figures there has been a heavy inquiry. There is still some difficulty in reconciling deliveries, but the demand is more urgent. Ohio and Pennsylvania Iron, as well as Southern, has improved. The sales of Coke Iron are far in excess of Charcoal, of course, but the latter brands are not neglected. Gray Forge Iron has been especially sought, and has been relatively stronger than other grades. A record of the sales of the week, however, shows a fair proportion of Softeners, and larger transactions are reported in Car-Wheel brands, both of Northern and Southern production. No. 1 Southern Foundry is quotable at $14.50 @ $15, but the inside price is considered low and the outside rate as an extreme. But moderate sales have been made within this range. 2000 tons No. 2 Foundry sold at $14, 1000 tons No. 3 do. at $13.50, but more has been sold at $13.25; 2000 tons Close Bright sold at $13.50; 2000 tons Gray Forge at $13.25; 1000 tons Lake Superior Car-Wheel at $20.25, and 2000 tons Southern Car-Wheel at $23, cash; 1000 tons Mottled at $12.25. At the close a sale of Gray Forge is reported at $13.50, supposed to be on four months' time. An effort is reported to have been made to associate the Lake Superior Car-Wheel Iron furnaces in a combination similar to that which exists in the South. But the furnaces themselves have discouraged any such movement, and it has apparently been abandoned. The following are the approximate prices current here at the close for cash, f.o.b.:

Foundry.

Southern Coke, No. 1	$14.50 @ $14.75
Southern Coke, No. 2	14.00 @ 14.25
Southern Coke, No. 3	13.25 @ 13.75
Ohio Soft Stone Coal, No. 1	15.50 @ 16.00
Ohio Soft Stone Coal, No. 2	14.50 @ 15.25
Mahoning and Shenango Valley	16.00 @ 16.50
Hanging Rock Charcoal, No. 1	20.00 @ 22.00
Hanging Rock Charcoal, No. 2	19.00 @ 21.00
Tennessee and Alabama Charcoal, No. 1	17.50 @ 18.00
Tennessee and Alabama Charcoal, No. 2	16.50 @ 17.00

Forge.

Strong Neutral Coke	13.00 @ 13.25
Mottled Neutral Coke	12.00 @ 12.25
Gray Forge	12.75 @ 13.00

Car-Wheel and Malleable Irons.

Southern Car-Wheel	20.00 @ 23.00
Hanging Rock, Cold Blast	22.00 @ 25.00
Lake Superior Car-Wheel and Malleable	20.00 @ 20.50

Manufactured Iron.—There has been but little improvement in the demand, but a little better feeling has been encouraged by the course of Pig-Iron.

Nails.—There has been a moderate jobbing demand and a steady market. Iron and Steel Nails, 12d @ 40d, sell at $1.80 @ $1.90 ₱ keg, with 10¢ rebate in carload lots at the mills; 50d @ 60d, at 25¢; 10d, 10¢; 8d @ 9d, 25¢; 6d @ 7d, 40¢; 4d @ 5d, 60¢; 3d, $1, and 2d, $1.50 ₱ keg more. Steel Wire Nails sell at $2.40 for 60d.

Old Material.—There has been but little demand for either Rails or Wheels, and prices are nominal at $20 @ $20.50 ₱ ton for Rails and $17 @ $18 for Wheels.

Pittsburgh.

Office of *The Iron Age*, 77 Fourth Ave. {
PITTSBURGH, July 2, 1889. {

The general Iron business continues in much the same condition noted in our last report. There is usually a lull during the first half of July, when it is customary with a good many firms to shut down their mills to take stock and make repairs. We may be mistaken, but the indications are that the last half of the year will make a better showing than the first. There was more business in June than either April or May, and but for the fact that prices were very close there would be no cause for complaint.

Quite a number of firms here and west of Pittsburgh have already signed the scale, and it is notable that others will do so within the next week or two. Those firms that have shut down for repairs will be in no hurry about signing, knowing as they do that if so disposed they need not sign before they are ready to start up. At the Homestead Steel Works, however, it is pretty evident that there will be a strike. The firm notified all the workmen employed at the Homestead Works that if they did not accept the wage-scale presented they might consider themselves discharged, and as but very few of the men accepted the scale it may be taken for granted that a strike has been declared by the latter.

River navigation has kept up remarkably well, and another tow of Steel Rails was taken out from here within the past week. Thousands of tons of new Steel Rails have been taken out since April 1, and considerable Iron Ore has been brought here from the Missouri mines by river. But few Coal shipments have been made by river of late, owing to the fact that there is no inducement to make shipments. Pittsburgh Coal is selling 5¢ lower per bushel at Cincinnati than ever before.

Pig-Iron.—There is a continued good degree of activity, and for good Irons the market is firm and sales of standard brands of Gray Forge have been made within the past few days at an advance of 10¢ @ 15¢ per ton. We are advised of several transactions at $14, cash, whereas the same makes until within the past week were sold at $13.85 @ $13.90, cash. Bessemer Iron is also firmer, and it as well as Mill Iron is worth more for future than present delivery; while Bessemer has been sold at $15.75 @ $16, cash, for immediate or near-by delivery, furnace men are asking about 50¢ per ton more for future delivery. We are advised of a sale of 2000 tons for delivery running from July to October, equal to $16.25, cash, Pittsburgh. We can also report a sale of 1000 tons Gray Forge at $13.50, cash, Valley furnace, equal to $14.15, cash, Pittsburgh. We quote prices as follows:

No. 1 Gray Forge	$14.00 @	.....	cash
No. 2 Gray Forge	13.65 @	$13.75,	"
All-Ore Mill	14.50 @	15.00,	"
White and Mottled	13.00 @	13.50,	"
No. 1 Foundry	16.00 @	16.25,	"
No. 2 Foundry	15.00 @	15.50,	"
No. 3 Foundry	14.50 @	14.75,	"
No. 2 Charcoal Foundry	21.00 @	22.00,	"
Bessemer Iron	16.00 @	.....	"

Muck-Bar.—The market is more active and stronger within the past couple of weeks; an advance of 50¢ ₱ ton has been established. Sales of 2000 tons reported at $26.50, cash, and 2500 tons delivered at Philadelphia at $28.50, cash. As the freight is $2 ₱ ton, $28.50 delivered at Philadelphia is the same as $26.50 here.

Manufactured Iron.—There is a continued fair demand for all kinds of Merchant Iron, but no improvement in prices, which are still quoted upon a basis of 1.60¢ @ 1.70¢ for Bars, 60 days, 2% off for cash, for first-quality Iron. Old Rail Iron can be obtained for considerably less. Skelp Iron, for which there is a continued good demand, is still quoted at 1.62½¢ @ 1.65¢ for Grooved and 1.90¢ @ 1.95¢ for Sheared.

Nails.—The Cut-Nail trade continues in a demoralized condition, and now that the Western Nail Association are no more each firm is free to make its own prices. Pittsburgh manufacturers continue to quote at $1.85 @ $1.90, 60 days, 2 % off for cash, but they are not making very many sales. Wire Nails are quoted at $2.20 @ $2.25, 60 days, 2 % off for cash.

Wrought-Iron Pipe.—There is no abatement in the demand for Pipe; all the mills in the country are in the combination, and combination prices are being faithfully adhered to. Never before in the history of the trade were prices so well and faithfully maintained, and never before was the organization in so good a condition. Discounts on Black Butt-Welded Pipe, 52½ %; on Galvanized do., 45 %; on Black Lap-Welded, 65 %; Galvanized do., 52½ %; Boiler Tubes, 1¾ inches and smaller, 55 % off; 2 inches and larger, 60 % off; Casing, 5⅛ inches 62½ % off; other sizes, 60 % off; 2-inch Tubing, 13¢ ₱ foot, net.

Old Rails.—The offerings of Old Iron Rails continue light and with considerable inquiry. The market is firm at the recent advance to $22.50, cash. We are advised of a sale of a good-sized lot for delivery this month at $22.50. Brokers nearly all report that it is very difficult to find any one having Rails to sell. Old Steel Rails are quoted at $16.50 @ $17, cash, for short and $19.50 @ $20 for long lengths.

Steel Rails.—The market here is very strong, and within the past week prices have been further advanced. Carnegie, Phipps & Co. now quote at $29, cash, at mill, but it is probable that the quotation in question would be shaded somewhat. The Allegheny Bessemer Company are reported as having enough orders booked to absorb their production until January next.

Billets, Blooms, &c.—The market for Bessemer-Steel Billets and Blooms is firmer, and they are now quoted at $27 @ $27.50, as to size, delivery, quality, &c. Nail Slabs, $26.50 @ $26.75. There have been no sales reported recently of Bloom or Crop Ends, hence it is difficult to give reliable quotations.

Railway-Track Supplies.—There is a fair demand, but no change in prices. Spikes, 1.95¢, 30 days, free on cars at works; Splice Bars, 1.65¢ @ 1.75¢; Track Bolts, $2.75 with Square and $2.85 with Hexagon Nuts.

Old Material—Is firmer, and increased demand is looked for before the close of this month. No. 1 Wrought Scrap, $18 @ $18.50, net ton; No. 1 Wrought Turnings, $13 @ $14; Old Car-Axles, $23 @ $24; Cast Scrap, $13 @ $14, gross; Old Car-Wheels, $18; Mixed Steel Scrap, $15.50 @ $16.

Spiegel—Is quoted at $30 @ $30.50 for 20 %, and Ferromanganese at $59.50 @ $60 for 80 %.

Louisville.

LOUISVILLE, KY., July 1, 1889.

Pig-Iron.—The market has been advancing during the past week, and sales have been made at prices 50¢ a ton over the preceding week. Large blocks of Iron are not being offered, and buyers find some trouble in obtaining the brands and deliveries they desire. Where parties wish to purchase for this month's delivery they would be asked a further advance, and by some furnaces the order would not be accepted at any price. The feeling is very strong, and it is thought that the market will show steady improvement from now on. Reports from all Iron circles show heavy demand and advancing tendency. We quote as follows:

Southern Coke, No. 1 Foundry	$14.50 @	$15.00
Southern Coke, No. 2 Foundry	14.00 @	14.50
Southern Coke, No. 3 Foundry	13.25 @	13.75
Gray Forge	12.75 @	13.25
White and Mottled, different grades	12.25 @	12.75
Silver Gray, different grades	12.75 @	13.75
Southern Charcoal, No. 1 Foundry	16.25 @	16.75
" " No. 1 Mill	14.75 @	15.25
Southern Car-Wheel, standard brands	21.75 @	22.75
Southern Car-Wheel, other brands	18.00 @	19.50
Hanging Rock Coke, No. 1 Foundry	15.50 @	16.00
Hanging Rock Charcoal, No. 1 Foundry	19.50 @	21.00
Hanging Rock, Cold Blast	20.75 @	22.75

Detroit.

WILLIAM F. JARVIS & CO., under date of July 1, 1889, say: While the actual business in all grades of Pig-Iron shows an improving tendency as far as tonnage is affected, it does not show, up to the present time, any improvement in prices as a rule. To be sure, some special Mill Irons from the South have brought 25¢ ₱ ton more than the lowest figures of this year, but a careful survey and inquiry show that the market, which unquestionably is rapidly approaching a healthy condition, cannot yet be said to have fully reached it. Very large blocks of Lake Superior Charcoal Iron have been placed at ruling figures, reviving rumors of short supply; still not a penny higher has yet been asked, but, should the present rate of purchasing be continued, short supply will soon be plainly seen, and the furnace men must then obtain better figures. With a very active but only reasonably strong market we repeat following quotations:

Lake Superior Charcoal, all numbers	$19.00 @	$19.50
Lake Superior Coke, all ore	18.00 @	18.50
Lake Superior Coke, cinder mixed	17.50 @	18.00
Standard Ohio Black Band	17.50 @	18.50
Southern No. 1	16.50 @	17.00
Southern Gray Forge	15.00 @	15.50
Southern Silvery	16.00 @	16.50
Jackson County (Ohio) Silvery	18.00 @	18.50
Old Wheels	18.50 @	19.00

St. Louis.

OFFICE OF *The Iron Age*, 214 N. Sixth st., {
ST. LOUIS, July 1, 1889. {

Pig-Iron.—There has been steady buying during the past week, but no large transactions to note. A firm tone prevails and prices show more strength, but there has been no advance over the figures current one week ago, although for sales made to extend over several months a proportionate advance has been realized. Furnaces are disposed to ask full prices, and only on the most favorable orders will they grant concessions. For ordinary-sized lots we quote as follows, for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry,	$15.25 @	$15.75
Southern Coke, No. 2 Foundry,	14.75 @	15.25
Southern Coke, No. 3 Foundry,	14.25 @	14.50
Gray Forge	13.25 @	13.75
Ohio Softeners	17.00 @	19.00
Lake Superior Charcoal	19.75 @	21.50
Missouri.		
Charcoal Foundry, No. 1	16.00 @	16.50
Charcoal Foundry, No. 2	15.00 @	15.50
Tennessee.		
Charcoal Foundry, No. 1	17.00 @	18.00
Charcoal Foundry, No. 2	16.50 @	17.00

Connellsville Coke, f.o.b. East St. Louis, $4.40; St. Louis, $4.55.

Bar-Iron.—The demand continues to improve, and mills are kept comfortably employed, and have advanced prices about $1 ₱ ton, and say the outlook is brighter to-day than at any time since the first of the year. Car-builders are busily engaged, and are consequently large buyers. Country jobbers who have been carrying light stocks are now in the market, and during the past week placed some good-sized orders. We quote as follows: For small lots from store, $1.80; carload lots from $1.65 to $1.70.

Barb-Wire.—Manufacturers report a fair trade, and are running their mills full time—not that the demand requires it, but to be in readiness with good-sized stocks for any advance in prices, which they confidently expect will take place shortly. Mills quote from $2.75 to $2.80 for Painted, and from $3.35 to $3.40 for Galvanized; carload lots at from $2.65 to $2.70 for Painted, and $3.25 to $3.30 for Galvanized, f.o.b. St. Louis.

Birmingham.

BIRMINGHAM, ALA., July 1, 1889.

There is a distinctly better feeling in the Iron market to record for the past week. Prices are better by 50¢. The furnaces are all doing well and running to full capacity with a good quality output The largest rolling-mill of the district has just to-day completed an anniversary. To your correspondent the manager said that, while the year had not been as profitable with the immense amount of work done as was anticipated, the situation was satisfactory and the outlook altogether encouraging. The financial situation, while most business has been dull the past few months, is on a solid basis. Birmingham banks have just established a clearing-house, and the first report will show a rank much above many older cities. With all the wild speculative adventures that have occurred here of recent years there is a very notable degree of caution and strict business methods now observed in all transactions. This tends to dissatisfy many of those who were prone to look for quick and big profits on small investments, but the general trend is toward the substantial rewards of soberly-directed labor, not speculation in lands or stocks, but in achieving the best results from economical methods in mining and manufactures. There has been some talk the past week of a recent discovery of Ore in the valley (Jones) of which Birmingham is the center, suitable for the manufacture of Steel. This Ore is within 1½ miles of the Court-House of Birmingham. It belongs to the well-known Red Mountain body of Ore, and has not been used because it happened not to be in the path of the first railroads which intersected about this place. All these roads traversed beds of Ore which have been successfully used in the manufacture of Pig-Iron, attracting the attention of the Iron world to the promise of Alabama. The building of a railway around the mountain close to town has upturned Ores which, after careful and numerous analyses, are belived to be exceedingly valuable. They average 45.5 of metallic Iron, 22 of silicon and only 0.06 of phosphorus. Opinions differ as to whether this Ore will do for Steel-making of any sort, but there are many who are confident it can be utilized profitably. The vein is 17 feet thick, and nearly 20 miles long, almost the entire length of Jones Valley. Thorough tests will be made of this Ore, and no pains nor reasonable expense will be spared to ascertain its full value. In the meantime the people who believe in the Henderson process are enlarging their plan of operations and confidently claim an early fruition of their best promises. The plant has been moved from Birmingham to Bessemer on account of liberal land concessions, and the owners propose to erect a large and substantial plant to manufacture Steel of all kinds from the coarsest to the finest. All this ambitious reaching out after the higher grades of the uses of Iron manufacture seems amply warranted by local circumstances. The city and its numerous suburban settlements continue to grow, and never before, perhaps, in any county in a Southern State has there been so much building. To this contractors, brick-makers, carpenters and Hardware dealers are ready to attest. The last named say their business is 100 per cent. better now than at the same time last year, when general business seemed more promising. Altogether Birmingham is as well prepared for any fate as any city in the country.

New York.

Office of *The Iron Age*, 66 and 68 Duane street, NEW YORK, July 3, 1889.

Pig-Iron.—The market continues to improve in tone, no elements of weakness being now apparent. Buyers have experienced such a change of sentiment that they seem to expect an advance in price as a natural sequence, and are themselves expressing bullish views. Business has been fairly active, although sales will hardly foot up as great an aggregate as for either of the preceding two weeks. An error was made in our last issue relative to the action of the Thomas Iron Company. They have no Iron to sell, but have advanced prices 50¢ ₱ ton on old orders. Leading makers of Southern Iron are to a still greater extent withdrawing quotations, and annulling options that have not been taken up, and thus narrowing the channels of supply very considerably. Few brands are now available at our inside figures. We quote Northern Irons at tidewater, $16.50 @ $18 for No. 1, according to brand; $15.50 @ $17 for No. 2; $14.50 @ $15.25 for Gray Forge. Southern brands sell at $16.50 @ $17 for No. 1; $15.50 @ $16 for No. 2; $14.75 @ $15 for No. 3; $14.25 @ $14.50 for Gray Forge, all delivered at New York.

Scotch Pig.—Sales have been very moderate. Freights are firmer and prices are steady at the following quotations: Eglinton, $19; Dalmellington, $19.50; Langloan, $21.25; Summerlee, $21.50; Coltness, $21.50.

Spiegeleisen.—Importers have done very little in this line, quoting 20 % at $28 @ $28.50, and 80 % Ferro at $59 @ $60.

Wire-Rods.—The situation is unchanged, $43, ex-ship, being quoted, with no sales.

Manufactured Iron.—Less activity is noted in this line, as most of the mills will now be shut down from one to three weeks to make the usual semi-annual repairs. The upward tendency in prices has been checked for the present, but at the same time there are no signs of a retrogression to former figures. The advances being made in wages are regarded as a promising sign that values will be sustained. Prices are about as follows for delivery on dock: Sheared Plates, 2.05¢ @ 2.1¢; Universal Mill Plates, 2.1¢ @ 2.15¢; Angles, 2.05¢ @ 2.1¢; Tees, 2.5¢ @ 2.6¢; Beams and Channels, 2.8¢. Tank Iron, 2.05¢ @ 2.1¢; Shell, 2.4¢ @ 2.5¢; Steel Tank, 2.25¢ @ 2.3¢; Shell, 2.4¢ @ 2.5¢; Flange, 2.7¢ @ 2.8¢; Firebox, 3.25¢ @ 4¢; Common Bar Iron, 1.6¢ @ 1.65¢; Medium, 1.7¢; Refined, 1.75¢ @ 1.9¢.

Merchant Steel.—The usual midsummer quietness is reported in this branch. Quotations are as follows: Tool Steel, good brands, in large lots, 7¢ @ 7½¢; specials, 12½¢ @ 20¢; Crucible Spring, 3½¢ @ 4¢; good Open-Hearth Machinery, 2.30¢ @ 2½¢; Bessemer ditto, 2¢ @ 2½¢; Open-Hearth Spring, 2½¢ @ 2½¢; Tire, 2.15¢; Toe-Calk, 2½¢; Sheet, 6½¢, 8½¢ and 10½¢.

Steel Rails.—Inquiries for round lots are in the market, but the sales of the past week probably aggregated not more than 10,000 tons. All of the mills are not equally firm in maintaining the price recently quoted, but at the same time they all have a bottom rate below which they will not go, and which is very close to the figures referred to. The situation is quite promising for the manufacturers, who now enjoy full control of it, and they certainly ought to be able to make the last half of the year yield greater profits than the first half. Quotations are unchanged at $28 @ $28.25 at mill.

Track Supplies.—A heavy business is in progress, particularly in Fish-Plates and Spikes. The manufacturers of Steel Fish-Plates continue to be a disturbing element, however, and low prices still rule. Quotations are about 1.75¢ at mill for Steel, and 1.85¢ @ 2¢ for Iron. Track-Bolts with square Nuts are quoted at 2.70¢ @ 2.75¢; Hexagon Nuts, 2.90¢ of Common Iron, and 3¢ Refined Iron Spikes are firm at 2¢.

Old Material.—Old Rails are very active. We hear of a purchase of 7000 tons by a Western mill on private terms, the Rails coming from a remote locality. Holders of foreign Rails here refuse to sell under $24, ex-store, but could have realized $23 during the past week. Negotiations are pending for considerable quantities of American Rails, but it is possible that prices may be weakened through the appearance in this market of some 10,000 tons of Southern Rails. Part of them have probably been disposed of at figures somewhat under recent quotations. Wrought Scrap is in demand at $21 for No. 1.

H. H. Mansfield, dealer in railroad and contractors' supplies, at 36 Pine street, New York, has been appointed agent for the city and vicinity for the Frankford Steel Company, of Philadelphia. This company manufacture steel railroad and machine forgings, solid crucible steel castings and best grades of tool and machinery steel. Mr. Mansfield also represents the car-wheel works of A. Whitney & Sons, Philadelphia. He is therefore in a position to give excellent satisfaction to those doing business with him.

Financial.

A very good degree of business activity prevails locally and throughout the country, so far as can be judged from the aggregate returns of clearing-houses in leading cities, which indicate an increase of 35 % compared with the corresponding week last year, points in the West and Northwest enjoying their full share. Crop prospects, as a whole, are unimpaired, and inspire confidence in the outlook for the coming autumn. The tendency to speculation in commodities and "industrial" securities overshadows other interests represented on 'Change, but is scarcely noticeable in the ordinary channels of trade. The railroad situation causes little disquietude, it being obvious that "it requires greater provocation to precipitate a railroad war now than it did a year or two ago." The eastward movement of freight by rail is about the same as last year, while the comparative statement of tonnage by the Erie Canal is highly favorable, the total since the opening of navigation being 1,456,000 tons, an increase of 286,700 tons over the same time

in 1888. The wheat market took an abrupt turn downward on more favorable crop news from Russia and weaker cables, and for spot stock prices are variable. Corn is less active. Coffee, after a collapse, is variable. Cotton spots are $\frac{1}{16}$¢ higher, on reports of heavy rains. Sugar is decidedly strong, although demands are not vigorous. Provisions are dull and weak, with shipments from all the ports much increased over last year. In dry goods print cloths are advanced $\frac{1}{8}$¢.

The stock market is irregular. Western railroad properties were depressed by the renewal of rate cutting. About the strongest stocks were New England and Reading. Speculation in pipe-line certificates and the trust stocks absorb attention. There was a sharp rise in the former, which started a covering of short contracts. The Sugar trusts were lower on realizing sales, but subsequently recovered, and on Monday there was a heavy advance. Lead trusts advanced on a report that the Brooklyn White Lead Company had joined the combination, and there was a spurt of small proportions in Distillers and Cattle Feeders' and in American Cattle Trust certificates. Cotton Oil Trust was generally lower. The coal stocks were bought on the favorable advices respecting the condition of trade. Western stocks were bought at the close very largely on favorable Chicago advices in regard to the rate troubles in the Northwest. The dispatches alluded to said that the advance by the Lake Superior lines to a basis of 66¢ first is an advance on first-class of 13¢ over the present rate. On Monday Boston's specialties broke sharply and the general market was lower.

United States bonds are quoted as follows:

U. S. 4½s, 1891, registered	106¾
U. S. 4½s, 1891, coupon	106¾
U. S. 4s, 1907, registered	128½
U. S. 4s, 1907, coupon	128½
U. S. currency 6s	118

With the beginning of a new fiscal year the semi-annual disbursements will reach the largest total ever known, the aggregate being nearly or quite $100,000,000, including Boston and Philadelphia. Boston alone figures up $15,415,000, of which more than half represents railroad bonds. The Treasury pays $9,000,000 interest on the 4s and currency 6s, which is a clear gain to the banks, and Wall street is promised easy money all summer. In the meantime it is remarked that the promoters of speculation in trust certificates may be relied upon to get in some fine work, quick profits being a more weighty consideration than the quality of the stuff. Time loans were firmer, the demand being good and the supply somewhat limited. Many of the banks are entirely out of the market for commercial paper. We quote 60 @ 90 day indorsed bills receivable, 4 @ 4½ %. Brokers anticipate that July interest will get into pretty general circulation within ten days and that the market for paper will then be easier. The bank return of Saturday showed a loss of $2,169,200 in cash and of $1,628,275 in surplus reserve.

The various Treasury statements made July 1 show that the decrease in the debt for June was $16,255,929, and for the year was $88,938,035. The interest-bearing debt is now $894,477,502, of which $139,639,000 is made up of the 4½ per cents, due in 1891, and $676,090,350 is in the 4 per cents, due 1907. The surplus is $71,484,042. The receipts from customs are $224,971,254; from internal revenue, $131,662,106, and from all sources $388,591,675. The expenditures for the year were $153,734,137 for ordinary appropriations, $87,977,682 for pensions, $41,060,612 for interest and $17,292,362 for premiums on bonds. The receipts for June aggregated $32,757,907 and the expenditures $13,750,174. The bond purchases consumed the entire surplus for the year and $44,000,000 besides. The 4 per cents have been purchased to the amount of $38,106,400, at a cost of $11,119,619, making the total payments for these bonds $49,226,019. The statement of the Treasurer shows that the gold in the Treasury has fallen from $321,297,376 May 31, 1889, to $303,504,319 June 29, 1889.

Exports of specie from this port during the week ended 29th ult. were $3,416,580, making a total of $51,096,000 since January 1, against $20,695,000 for the same time last year. In addition, $2,609,000 were shipped on Saturday, but further exports in any amount are not expected.

The posted rates for bankers' sterling are $4.87½ @ $4.88 for 60-day and $4.89 @ $4.89½ for sight. The market is easier.

Dun & Co.'s statement of business failures in the United States and Canada shows that for the first half of the present year the failures in the United States number 5603, as compared with 5189 for the same period in 1888, indicating an increase of 414. The liabilities for the first six months of 1889 are $65,828,853, while for the same period in 1888 they were $68,114,159. For the Dominion of Canada the number of failures reported was 886 in 1889, 872 in 1888 and 721 in 1887. The amount of liabilities was $7,352,338 in 1889, $7,802,422 in 1888 and $10,693,015 in 1887.

Metal Market.

Copper.—During the week under review London improved from £40. 5/, spot, to £41 and futures from £39. 15/ to £40. 10/; sales 1200 tons. Messrs. James Lewis & Son, Liverpool, in their circular dated June 17, express themselves as follows: "During the past few days representatives of the larger producers have again visited Paris to make one more attempt to conclude an arrangement with the French holders of the stock. No satisfactory conclusion appears, however, to have been arrived at, as one or two large producers hold aloof, and all hope of any combination to advance prices and reduce production may now, it would appear, be abandoned. If the market is left to itself and to take its natural course, lower prices in the early future will probably be followed by much higher prices later on, as the present excessive stock of about 100,000 tons above the normal quantity will then be rapidly absorbed by the trade, while production will fall off from natural causes. Already the effect of low prices is visible in diminished shipments from Chili, Australia, and some of the smaller mines elsewhere." From January 1 to June 17 the import of American Ingot Copper, &c., into Liverpool and Swansea was 11,682 tons Fine, against 13,206 in 1888 and 4,084 in 1887; the visible supply in England and France on July 1 was 111,780 tons, against 72,245 tons same date last year; the same deliveries were 10,500 tons, against 6200 tons same month last year. Our own market has been quiet at 12¢, Lake, to consumers, and casting brands, 10½¢ @ 11¢. The ensuing telegram was received last week: "BOSTON, June 29, 1889.—A gentleman well informed in Copper matters expresses the opinion that the American companies have sold 14,000,000 lb to the trade this month. He had knowledge of half that amount being sold in the first fortnight of June. He further said that the common view that the present arrangement of the companies expired July 1 was erroneous. Their agreement was for no specific time, but it was agreed that any company could withdraw from the present arrangement on 30 days' notice. The companies have a common selling agent and a single price now. Upon withdrawing the company would appoint their own selling agent and make their own price. Consumption has improved a good deal since the price was quoted at 12¢, and there is less inducement than formerly to disrupt the agreement between the companies. Some of the companies are burdened with a surplus of Copper and will have to postpone dividends until the metal is sold." We hear nothing to confirm the above, though it is admitted that some sales may have been made.

Tin.—Spot Tin rose in the London market since our last report from £89. 5/ to £89. 7/6, futures remaining unaltered, £90. Here 55 tons July were sold at 19.85¢ @ 19.95¢, 10 to-day at 19.75¢ and 10 at 19.70¢, and 10 tons October at 20¢. The visible supply July 1 in Europe and America was 13,846 tons, against 16,092 same date 1888 and 13,907 on June 1 last. Spot Tin closes at 19¾¢. *Tin-Plates.*—The only kind which maintains any show of firmness is Roofing-Plates; these are in fair demand, while the stocks thereof are light. There is no material change in Bright Plates, the demand for which is light. Advices from the other side report a rather firmer feeling among makers, as the surplus stocks are disappearing. We quote large lines, ordinary brands, ℔ box: Siemens-Martin Steel, Charcoal finish, $4.75 @ $5.50; Coke finish, $4.55 @ $4.65; Ternes, $4.12 @ $4.30; Coke Tins, $4.22½ @ $4.32½, and Wasters $4.12½ @ $4.15.

Lead.—Sales for the week have been restricted to 200 tons Common Domestic at 4.05¢, which is the figure to-day pending a decision in the Ore question in Washington. St. Louis is stiff at 3.80¢ @ 3.85¢ and Chicago at 3.85¢. The net export of Pig-Lead from Germany during the first four months was 10,609 tons, as compared with 7485 tons during the corresponding period of 1888.

Spelter.—The demand has continued moderate here at 5¢ for Common Domestic, which has been sold at Pittsburgh at equal to 5.15¢ in New York. Silesian may be quoted 5¼¢ nominally, nothing transpiring therein.

Antimony.—While the inquiry is quite lively, the stock here is reduced to a minimum. Sales made have been at 14¾¢ @ 15¢ for Hallett's and 15¼¢ @ 16¢ Cookson's brand.

New York Metal Exchange.

The following sales are reported:

FRIDAY, June 28.

50 tons Lead, spot	4.02½¢
15 tons Tin, July	19.85¢
28,000 ℔ G. M. B. Copper, July	9.75¢

Coal Market.

In the Anthracite Coal trade there is a fair amount of business in progress, with deliveries quite active under orders given previous to the last advance in prices. Much embarrassment is experienced from the lack of cars for transportation, so that there is more solicitude respecting the car supply than there is of anxiety to obtain new business. This situation is due in part to the pressure for cars in the Bituminous trade. A week ago, in opposition to the advice of several influential representatives of the Coal trade, prices were advanced, and compare with the previous schedule as follows:

	New prices.	May prices.
Broken	$3.90	$3.85
Egg	4.15	4.00
Stove	4.40	4.30
Chestnut	4.15	4.00

It will be seen that the advance on the last circular is from 5¢ to 15¢, but present prices average below those made in July last year, and it is claimed that the actual selling prices are up to the May circular. The latest advance may not be realized for some days to come, but operators predict difficulty in getting Coal later on,

when the demand naturally becomes more urgent. The Reading company are again working all their collieries and shipments West via Buffalo are resumed. The Philadelphia *Ledger* says: "The Anthracite Coal trade enters upon the second half of the year with a very promising outlook. At present the Coal markets are in good shape, and the restrictive policy as regards production which has been pursued has enabled the larger producing interests to maintain prices upon a profitable though not high basis. The accumulated stocks of Anthracite at tidewater shipping points are not large, the aggregate being barely 1,000,000 tons, while the total production of Coal for all the mining regions thus far this year is over 1,000,000 tons behind the output of last year to the corresponding date."

The supplies of Bituminous Coal are not fully up to requirements, although the Beech Creek route is again in operation. A convention of dissatisfied miners now in session at Altoona causes some apprehension of labor troubles, as the strike among Bituminous Coal miners in that part of the State may involve the entire Cambria, Clearfield and Centre region. The present strike, so far as it extends, is for an equalization of rates. The miners in Gallitzin or mountain region are working at 40¢ ℔ net or 45¢ ℔ gross ton, while in the Clearfield region the price is 50¢ ℔ gross ton.

Imports.

Hardware, Machinery, &c.

Boker, Hermann & Co., Mdse., cs., 36; Arms, cs., 53
Clark, G. A. & Bro., Mach'y, pgs., 103
Elmenhorst & Co., Mach'y, pgs., 3
Field, Alfred & Co., Mdse., cs., 10
Folsom, H. & D., Arms, cs., 6
Hammacher, Schlemmer & Co., Nails, cs., 40
Hartley & Graham, Mdse., cs., 57
Liera, J., Mach'y, box, 1
Morris, L. W. & Co., Mach'y, pgs., 2
Neumann, M., Iron Chairs, pgs., 100; Iron Tables, pgs., 3
Schoverling, Daly & Gales, Arms, cs., 15
Wiebusch & Hilger, Lim., Hdw., cs., 3
Witte, John G., Cutlery, cs., 4

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, TUESDAY, July 2, 1889.

Block-Tin has been very irregular, having sold at as low as £87. 15/ under the pressure of large offerings, which point in turn brought out important speculative buying, the active business from which caused an advance to £89. 5/ for prompts and £90. 5/ for futures. The latter prices, however, were paid only for small parcels, and when holders tried to avail themselves of the opportunity to realize the market quickly receded to £89 for prompts. Subsequently sales were made at £88. 15/, and of futures at £89. 5/, or nearly the same figures ruling a week ago. Straits shipments the past six months to Europe and America amount to 12,000 tons. The Billiton sale of Batavia realized a parity of £90 in Holland.

Copper weakened on Wednesday last under the weight of heavy realizations, but recovered when the selling movement ceased, and Merchant Bars were quite firm to-day at £41 for prompt, although sales of Best Selected were reported at £45. The chairman of the Namaqua company at a recent meeting referred to the syndicate difficulty, and stated that, owing to failure on three cargoes of Ore, 2200 tons realized £16,000 less than contract price and no further dividend was declared. Several actions raised by mining companies against the Société des Métaux for refusing to take production of mines as per contract have been dismissed. Shipments have been made on a recent large order from the Continent. There have been sales the past week of 1090 tons Anaconda Matte at 8/6 to arrive at Liverpool.

The position of the Tin-Plate market is perplexing. Buyers and sellers are wide apart on prices, except for specials, the demand for which continues good. Ordinary sorts are slow and prices for the same appear weak, although not quoted lower. The hot weather is causing more or less reduction in the output.

Pig-Iron warrants are stronger, with sales at up to £43. 10/, chiefly in consequence of better reports upon the condition of the Iron trade in the United States. A larger demand from Canada has had some influence, however, as have also increased speculative interest and heavy purchases by "short" sellers. Makers' brands of Scotch have met with brisker sale, and the majority are a shade firmer. Hematites have also been quite active, and the business in Spiegeleisen continues brisk, with prices about the same as last week.

The Manufactured-Iron trade has been livelier than during the preceding week, and prices are strong. The Staffordshire list houses have raised their prices 10/ on Sheets. The Steel trade is also strong, with prices up 5/ on Rails, 2/6 on Blooms and 2/6 @ 5/ on Wire Rods.

In the German market prices of Pig-Iron have advanced, in sympathy with the recent rise on Rolled Iron, Plates, &c.

Scotch Pig.—There has been a fairly active business and prices are firmer, with an advance on most brands:

No. 1 Coltness,	f.o.b. Glasgow	.....	54/
No. 1 Summerlee,	" "	.....	53/6
No. 1 Gartsherrie,	" "	.....	51/9
No. 1 Langloan,	" "	.....	53/6
No. 1 Carnbroe,	" "	.....	46/3
No. 1 Shotts,	" at Leith	.....	52/6
No. 1 Glengarnock,	" Ardrossan	.....	51/6
No. 1 Dalmellington,	" "	.....	45/
No. 1 Eglinton,	" "	.....	43/6

Steamer freights, Glasgow to New York, 2/6; Liverpool to New York, 10/.

Cleveland Pig.—Business has been merely fair but prices are much firmer. No. 3 Middlesborough quoted 39/ @ 39/6, prompt.

Bessemer Pig.—A very large trade reported and the market firm at last week's prices. West Coast brands, mixed numbers, 49/6, f.o.b. shipping point.

Spiegeleisen.—The demand has continued brisk and the market strong. English 20 % quoted 80/, f.o.b. at N. W. England shipping point.

Steel Rails.—There is still a heavy demand. Prices higher and strong at the advance. Heavy sections quoted at £4. 15/ @ £4. 17/, and light sections £5. 2/6 @ £5. 5/, f.o.b. at N. W. England shipping point.

Steel Blooms.—The demand has continued brisk and 2/6 advance is asked. We quote £4. 7/6 for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—Transactions in this line are still active and prices continue strong Bessemer, 2½ x 2½ inch, £4. 12/6, f.o.b. at N. W. England shipping point.

Steel Slabs.—A moderate trade doing at steady prices. Bessemer, £4. 12/6, f.o.b. at N. W. England shipping point.

Old Rails.—There is very little business at present. Tees quoted at £3. 5/ @ £3. 7/6, and Double Heads, £3. 12/6 @ £3. 15/, c.i.f., New York.

Scrap-Iron.—Only small sales are making. Heavy Wrought quoted at £2. 2/6 @ £2. 5/, f.o.b.

Crop Ends.—A moderate trade at previous prices. Bessemer quoted £2. 12/6 @ £2. 15/, f.o.b.

Tin-Plate.—Business moderate and prices barely steady. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade	15/3 @ 15/6
IC Bessemer Steel, Coke finish	13/6 @ ..
IC Siemens " "	13/9 @ ....
IC Coke, B. V. grade	13/ @ ....
Charcoal Terne, Dean grade	12/ @ 12/3

Manufactured Iron.—There has been more activity and the market is strong. We quote, f. o. b. Liverpool:

	£ s. d.		£ s. d.
Staff. Marked Bars	....	@	8 2 6
" Common "	....	@	6 5 0
Staff. Bl'k Sheet, singles	....	@	8 5 0
Welsh Bars (f.o.b. Wales)	5 12 6	@	5 15 0

Copper.—A moderate business. Little change in prices. To-day's prices for Bars were £41, spot; £40. 10/, three months' futures. Best Selected, £45.

Tin.—Market irregular, but quite active. Straits quoted to-day at £88. /15 @ £89, spot, and £90. 5/ @ £90. 10/ for three months' futures.

Lead.—The demand has continued slow. Quoted £12. 7/6 for Soft Spanish.

Spelter.—Transactions have continued large and the market is strong. Quoted at £19 for ordinary Silesian.

Foreign Markets.

EQUIVALENTS.

	Cents.
Franc, Peseta or Lira	19.3
Florin (Netherlands)	40.2
Florin (Austria)	35.9
Milreis (Portugal)	$1.08.
Milreis (Brazil)	54.6
Mark (Germany)	23.8
	Pounds
Kilogram	2.205
Picul	134.

BRAZIL.

PARA, June 28, 1889.—*India Rubber.*—Receipts are light, leaving no unsold stock. Both prices and exchange remain unaltered.—*Per cable direct.*

CHILI.

VALPARAISO, April 26, 1889.—*Copper.*—The only sale made during the month has been 2430 quintals at $15.10, f.o.b., since when the price has given way to $14.50 nominally, which at 26⅝d exchange and 30/ freight per steamer to Liverpool equals £38. 2/3. A great many mines have stopped work, and Chili's Copper production will dwindle to half what it is at present if prices do not recover considerably. The discharged miners will disperse, and it will not be easy to get them back should later on production be resumed in full in consequence of a permanently higher ruling. *Coal*—Has stiffened somewhat. We quote Newcastle 37/ @ 38/ and Australian 26/. *Exchange*—Has been steady; we quote 90 days' sight private bills on London 26⅛d.—*Weber & Co.*

EAST INDIES.

MANILA, June 24, 1889.—*Hemp.*—Prices are altogether nominal. We quote $14 ℔ picul, against $8.62½ same date last year, equaling ℔ ton, cost and freight, £45. 7/6, against £28. 5/. Clearances for the United States since last cable amounted to 10,000 bales, against 8000 same date last year; do. since January 1, 128,000; against 91,000; loading for do., 13,000, against 8000; cleared for England since January 1, 128,000, against 168,000; loading for do., none, against 14,000; cleared for all other ports, 22,000, against 40,000; receipts at all ports since last cable, 7,000, against 15,000, and since January 1, 289,000 bales, against 298,000 in 1888 and 228,000 in 1887. *Freight.*—$7.50, againt $5.50. *Exchange.*—Six months' sight, on London, 3/5¼, against 3/5¼.—*Ker & Co., per cable direct to their agent in New York, Mr. Charles Nordhaus, 89 Water street.*

PENANG, May 11, 1889.—*Tin.*—Receipts for the fortnight reached 5500 piculs, of which Europeans took 1460 and the Chinese 2000. The

market opened at $34.20 ℔ picul, subsequently gave way to $34.10, but closed at $34.25, at which Chinamen bought.—*Schmidt Kustermann & Co.*

BELGIUM.

BRUSSELS, June 22, 1889.—*Iron.*—The Belgian Iron market remains very firm. The late advance in Finished is readily submitted to by consumers; not so by exporters. There is a prospect of a further rise of 25¢ in a week or two. A brisk demand prevails for all sorts of Plates and Sheets. Following is the foreign Iron and Steel movement in Belgium during the first four months:

	Importations.		Exportations.	
	1889.	1888.	1889	1888.
Iron Ore	582,850	524,283	38,333	45,315
Steel Ingots	468	434	1,300	2,478
Steel Rails	119	88	16,826	11,172
Other Steel	913	849	5,535	7,836
Wrought do	360	72	1,534	724
Pig-Iron	79,514	59,146	2,156	3,773
Scrap-Iron	7,749	7,590	2,594	309
Iron Wire	1,133	1,159	1,755	1,293
Iron Rails	118	79	2,871	3,507
Iron Sheets	553	441	16,914	43,740
Other Iron	5,254	2,473	80,774	67,160
Nails	160	212	4,036	3,681
Wrought-Iron	1,375	1,493	9,030	5,464
Castings	565	223	4,882	3,144
Totals	681,031	598,542	188,540	169,596

—*Moniteur des Intérêts Matériels.*

SPAIN.

MADRID, June 22, 1889.—*Tin.*—A company has been formed in the Hague, Holland, under the name of the Galicia Tin Maatschappy, with a stock capital of 3,000,000 florins of 40¢, American, for the purpose of working a Tin-mining property in the Spanish Northwestern Province of Galicia. The Asturian-Gallician-Leon railroads render these Tin deposits easily accessible, and the company state that it will not cost over £22. 10/ to produce a ton of Tin. During the first four months the following amounts of Ores and Metals were exported from Spain as compared with the corresponding period of the preceding two years:

	1887. Tons.	1888. Tons.	1889. Tons.
Calamine	8,287	8,518	6,773
Pyrites	266,679	270,754	328,667
Iron Ore	1,822,534	1,622,828	1,657,961
Pig-Iron	39,183	19,699	24,204
Precipitate	9,823	10,164	8,781
Quicksilver	565	614	1,267
Pig-Lead	42,972	44,461	42,105
Totals	2,190,043	1,977,038	2,069,758

The increase in the export of Pyrites and Quicksilver will be noticed.—*Revista Minera.*

RUSSIA.

ST. PETERSBURG, June 20, 1889.—*Petroleum.*—Russian Petroleum exportation last year compares as per official returns as follows with that of 1887, quantities being given in puds of 36⅛ pounds American:

Export of Naphtha Products from Russia.

	1887. Puds.	1888. Puds.
Naphtha, crude	923,000	74,000
Vaseline and Paraffine	6,000	3,000
Refined Petroleum	11,191,000	26,651,000
Lubricating Oils, crude	1,663,000	1,280,000
Lubricating Oils, refined	1,076,000	1,421,000
Residue	3,211,000	4,417,000
Totals	18,070,000	33,846,000
Increase	15,776,000, or 87 %.	

Russian Refined Petroleum begins to compete keenly with American in British India in particular, where the consumption is rapidly on the increase. Thus in 1880–81 India imported 9,500,000 gallons; in 1883–84, 12,500,000; in 1884–85, 26,000,000, and in 1886–87, 29,000,000. This latter year was the biggest in the way of importation from the United States, which reached 27,443,000 gallons; in 1887–88 it declined to 25,000,000, and in 1888–89 to 20,000,000. On the other hand, the imports from Russia into India rose from 1,577,000 in 1886–87 to 5,036,000 gallons in 1887–88 and 17,516,000 in 1888–89. In March last 1,900,000 gallons arrived from Russia, against only 1,770,000 from the United States. The Russian Oil is packed the same as American, in cases containing two tins of 4 gallons each.—*Journal de St. Petersbourg.*

GERMANY.

HAMBURG, June 22, 1889.—*Iron.*—Makers of Pig-Iron are holding back in spite of the advance which the syndicate fixed on Foundry Iron of 3 marks, Nos. 1 and 2, and 2 marks, No. 3. Spiegel has quieted down, selling at 66 marks for 10 % to 12 %. The quotations for Forge Pig are 47 @ 62; Foundry do, 59 @ 66; Thomas, 47 @ 48; German Bessemer, 57 @ 58; White Steel, 60 @ 62, and English Bessemer, 49/6, being 1/6 higher than the week before; Luxembourg, 36 @ 41. Rolling-mills are doing well. Thin Sheets have been raised 15 marks ℔ ton. The Wire branch remains quiet and unaltered. Work is steady at the machine-shops, foundries and car-shops. The quotation for Wire-Rods remains 110 @ 120 marks ℔ ton; Steel Rails are higher, 125 @ 130, and even above this; do. for mines, 110 @ 115. The April export of Scrap-Iron has been 45,490 metrical cwt. of 100 kg., against 31,468 the previous year; Pig, 153,358, against 91,034; Steel Rails, 94,060, against 136,446; Merchant Iron, 164,164, against 139,591; Wire-Rods, 127,453, against 149,449; Hardware, 50,424, against 70,737, and Wire Nails, 40,192, against 38,924.—*Borsenhalle.*

CHINA.

HONG KONG, May 17, 1889.—*Petroleum.*—The recent arrivals and sales by auction have caused a further drop of rates, and spot cargo, Comet brand, is now quoted $2.15 @ $2.17½, with very little inquiry. Heavy shipments being shortly due, a further decline appears imminent. Unsold stocks aggregate 140,000 cases. *Vermilion* may be quoted $42.43 ℔ picul.—*Arnhold, Karberg & Co.*

Subsidies to Canadian Steamship Lines.

London *Engineering* for June 14 contains the following interesting editorial statement:

Just before the prorogation of the Canadian House of Commons the Minister of Finance moved the following resolutions, which were subsequently adopted: "That a subsidy not exceeding £25,000 per annum for a term of years should be paid for an effective fortnightly steam service between British Columbia and the Australian colonies, including New Zealand; that a subsidy not exceeding £15,000 for a monthly, or £25,000 for a fortnightly, service should be paid annually for a good steamer line between British Columbia and China and Japan, provided the Imperial Government give a subsidy of not less than £45,000 for a monthly, or £75,000 for a fortnightly, service, and that a contract for ten years should be made for a fast weekly steamship service between Canada and the United Kingdom, making connection with a French port, for a subsidy not exceeding $500,000 or £100,000 sterling a year."

Respecting the Atlantic service, the minister remarked that for a number of years the Canadian mail and passenger steamers had not been satisfactory; that while a number of lines had been running between Europe and New York at a speed of from 16 to 18 knots an hour, their own service, very good in some respects, had an average on the various steamers of from 9 to 15 knots, and the result was that Canadian vessels were not getting their fair share of the passenger-carrying. The self-respect of Canada cannot allow this state of things to continue, and as the geographical position and natural facilities of Canada give her certain advantages upon the outer oceanic portion of the through route, the Government deem it of importance, without overburdening the financial power of the country, to have a service on the Atlantic equal to the best that is running south of them.

Further, the Government deem that this should be distinctly a Canadian route. Hitherto the subsidies have been paid to the Allan Line, their vessels having the privilege of going forward to an American port, which at first may probably have been a necessity to secure sufficient business, but the time has come when, if Canada has to support the service, the whole advantage ought to ensue to her ports and railways. The completion of the Canadian Pacific and extension of the railway system generally have entirely altered the position of matters. It is not now Canada alone that has to be served, but all to the west of Canada, and even to the south, can now utilize the railways and enable the shortest sea passage to be also the best. The extreme Eastern and Western ports, the furthest asunder on the American continent, the wonderful coaling facilities, unsurpassed by any country in the world, at each of these extreme east and west termini, and the temperate climate, all point to this as being the most eligible route between Europe and Asia.

Of course there are competing routes, via San Francisco on one hand and through the Suez Canal on the other; but to the important ports of China and Japan the Canadian route is considerably the shortest both in distance and time, even with the present inefficient service on both oceans; and with the fast service now proposed on the Atlantic and Pacific it ought to distance its competitors easily. For two years the Canadian Pacific Railway have been developing this route and have created a very fair trade. It needs, however, a better class of vessel and a more frequent service than hitherto has been the case. With the amount to be paid by England and Canada this is likely soon to be carried out, and the railway company are now taking steps to make the present monthly service a fortnightly one and to put on quicker and larger steamships.

For some time the Canadian Government have been negotiating with responsible parties for the quicker Atlantic service. For this three tenders have been sent in, of which the first, by a company not yet organized, was for a 15-knot speed at $416,000 per annum; the second was from the Allan Company for a 17-knot speed at £104,000 subsidy; the third was from the Andersons, of the Orient Line, who guarantee a power sufficient to make 20 knots an hour, the subsidy asked being £104,000 per annum. This last service is evidently the best, and the Government are now negotiating with the firm, and hope shortly to carry out the scheme.

In our issue of last week we made mention of the fact that Thomas W. Fitch had resigned his position as superintendent of the Braddock Wire Company, at Rankin Station, Pa. On the evening of the 29th ult. about 500 employees of the firm, preceded by a band, marched to the residence of Mr. Fitch in the East End, Pittsburgh, and presented him with a handsome silver dinner and dessert set, together with a costly gold watch and chain, as a token of the good-will and esteem existing between their late employer and themselves. While Mr. Fitch has resigned the superintendence of the works, he still retains his position as a director and his holdings of the stock of the company. He has retired in order to seek a much-needed rest, and will probably sail for Europe in a short time.

The Commercial Exchange of Des Moines, Iowa, in a very neat pamphlet of 32 pages, which is handsomely illustrated, call the attention of manufacturers and other business men to the advantages presented in that city for the location of new enterprises. The pamphlet gives a great many statistics relating to the resources and advantages of the State of Iowa, and calls particular attention to the claims presented by Des Moines as a most excellent location for a great variety of business enterprises not now represented there. Coal for steam purposes is obtained at 50 cents per ton. Lump and range coal is delivered at $2 per ton wholesale. There are 15 railway lines connecting with Des Moines, affording 17 distinct outlets. The city has a population of 55,000. The Des Moines River is to be utilized during the present year for water-power, and it is estimated that from 800 to 1500 horse-power will be thus obtained. A franchise has been granted by the City Council to a company proposing to manufacture fuel gas. Copies of the pamphlet can be obtained by addressing G. F. Selleck, secretary of the Commercial Exchange.

Hardware.

Many houses are busy taking stock and closing up the half-year's business. This, with the usual lull in trade at the opening of July, limits transactions. There is, however, some movement in a small way, and a number of buyers are testing the market with a view to placing early orders for fall stocks. There have been as yet exceptionally few announcements of changes in price, and the indications are that there will be less than the usual revision of quotations. Prices, as a rule, are exceedingly low, and do not as yet give indications of immediate recovery. There is, however, a better feeling in some lines, and the general tone of the market is hopeful as to the extent of future business, with a probability, however, that prices in lines which are not controlled by combination will continue lower than the manufacturers would desire, the active competition keeping profits to a narrow margin.

Cut Nails.

A very good distribution of Nails is reported by the several dealers and assortments in the city warehouses have been badly broken, running especially short on leading sizes. Prices are irregular, quotations ranging from $1.80 to $2. Sellers at $1.80 are, however, quite rare, most houses asking $1.90 to $2, which they say can be readily obtained. Buyers are taking Nails wherever they find them, being less disposed to haggle over prices if they find themselves able to get the sizes they need and in the quantity required. It is difficult to get quotations on carloads at present in this market, owing, first, to the short supply on hand, and, second, to the irregularity in receiving shipments from the factories, which continues to be an annoying feature of the trade. It is difficult to see how these conditions can prevail much longer without causing an advance by the lowest sellers to a somewhat higher level.

Wire Nails.

In view of the strenuous opposition to the new Wire-Nail card, so far as it relates to the miscellaneous or papered goods, the Western manufacturers, under pressure brought to bear upon them by many of the leading jobbers of the country, have been considering the advisability of abandoning that part of the card and returning to list with discount, as before. A meeting for this purpose was accordingly held last week in Cleveland, and a revised list was proposed, but final action has not, however, yet been taken. This method of selling the goods is generally regarded as much better than by card, but it is a question whether there is sufficient reason for the adoption of a new list instead of a return to the old one, which was perhaps too hastily discarded. Whatever action may be finally taken by the Western manufacturers, it is not regarded as probable that they will be followed by the Eastern, who are thus far adhering to their former lists and discounts. We have received from many Hardware men letters in which the new card on Wire Nails is referred to, and from some of these we give extracts below, the selection being made without reference to the views expressed, in order to represent fairly the general feeling of the trade. It will be seen that many of our correspondents object decidedly to the frequent changes that are made in lists, and especially in those relating to this line of goods, while others criticize or commend different points in the scheme:

WATERTOWN, N. Y.—We are considerably out of patience with the new Wire Nail card, We would have no objection to the change on penny Nails if any certainty existed of the card remaining in force any length of time. We had only fairly taught our customers last year's card, and now comes a change, and we will have all the explanations to go through again. However, we repeat we would be willing to put up with this annoyance if we could be assured that the card had come to stay. In our opinion the new arrangement on shelf Nails is entirely and radically wrong, for the reason that it forces retailers to sell these goods at the same margin per pound as penny Nails, which lessens the percentage of profit. To illustrate: Suppose Wire Nails cost us here $2.40 base and we add for profit 10 per cent., making our retail price, say, $2.65 base. On this base a customer purchasing ¼ No. 19 Finishing would expect to buy them for $2.65 + $6 = $8.65 per 100 pounds. These would have cost us, according to new card and our supposed base, $8.40 per 100 pounds, resulting in a profit of 3 per cent. Who in business would sell a paper of Tacks or a package of Clout Nails or any of the thousand and one small articles in a Hardware store for a net profit of ¼ cent? And yet that is what the Wire-Nail men in their short-sightedness ask us to do with shelf Nails. On the other hand, if we buy from list with discount we can fix a selling discount and make a uniform percentage on all sizes, and at the same time keep shelf goods so entirely separate from penny goods that even though the latter have to be sold on a small margin we can still make a fair margin on shelf Nails.

FAIRFIELD, ME.—I have read with considerable interest the comments of your correspondents on the new Wire-Nail list. My customers seldom ask the base price of Wire Nails at all. What most generally interests them is the price of the particular sizes of which they may be in want and the cost as compared with that of Cut Nails of the same sizes. It is the frequent changing of the price of Nails of a given size rather than the relative prices of the different sizes that makes the trouble. And the question naturally arises, why cannot the relative cost of the different sizes be figured and a list made that will endure for more than one year or a fraction of a year? We country retailers cannot, of course, understand all the details of the matter, so I suppose all we can do is to wait with such patience as we can command until the manufacturers can learn the cost of the different sizes and give us the "enduring" list. Heaven speed the day!

NASHUA, N. H.—We do not like the change in the base of Wire Nails; we sell very few Nails which come under the 6od base.

ITHACA, N. Y.—We expect to have no trouble with the Wire-Nail card, and are pleased with the shelf-list price. People are not acquainted with extras in Wire Nails to that extent that we will have any trouble, in our opinion. Only let the Nail men ascertain at what price they can afford to sell them and then stick to it.

WASHINGTON, D. C.—We do not like the new Wire-Nail card. Our principal objection is to the advancing of price on package Nails from the keg base. Carpenters have no difficulty in procuring Nail cards, and naturally our present paying profit on package Nails will be cut to the same narrow margin we now have in keg Nails.

NORWALK, CONN.—The constant and vexatious changes in the card rate and discounts of Wire Nails have often raised doubts in the minds of our customers as to whether we had two prices. It looks very much like speculation and certainly calls forth an inquiry as to why the charges are made. After so much experience it would appear that a Wire-Nail manufacturer should know the relative value of Wire and Cut Nails; if he does not he should at once gain the necessary knowledge and get the list at least to a steady basis. We are not at all in sympathy with these constant changes.

READING, PA.—It seems to us that the base begins at the wrong end.

BELFAST, ME.—A settled base of any price would be better than the constant changing.

EMAUS, PA.—Wire Nails are not universally used in this section, although people are beginning to take to them more and more. Sell a good many Slating-Nails. Have never sold them by the card and fix my own price. Still, the time is not far distant when it will come to the low base of the Cut Nail. If the Wire-Nail manufacturers wish to make a success of their business they must either make the 8 or 10 penny the base and fix their price accordingly, as it does not pay to talk list or base changes.

WASHINGTON, D C.—I believe generally the Hardware trade in Washington is not pleased with the change of the Wire-Nail list, and that they prefer the old list for papered Wire Nails. As far as I have learned all the dealers are selling at the old list at 70 and and 10 per cent. in small lots to the Hardware stores.

BATH, N. Y.—Your article on "How it Looks in the Country" has more truth than poetry. We think it would be a good thing for the retailer if we could go back to all sizes Cut Nails to the old base of 10s, as it is difficult to make customers see the point. We would much rather pay the same price for 10s and up, if the price were put to the price of 10s for consumers. Do not understand why 50d and 60d should cost more than 10d, and we do not ourselves. We give a customer say $2 base and then charge the extras on the large sizes and they lay it all on us. Your article should take in Cut Nails also.

Obituary.

William H. Cole, senior member of William H. Cole & Sons, of Baltimore, died at Brightside, Lake Roland, near Baltimore, on Sunday afternoon, June 23, 1889, of paralysis.

Mr. Cole was born in Baltimore, July 17, 1828, was educated as a lawyer, and after a short term of practice he joined with his brother-in-law, Mr. Hiss, and entered the Hardware business under the firm name of Hiss & Cole, in the year 1859. In the year 1864 this firm dissolved and Mr. Cole continued the business alone until 1879, when two of his sons, Allen and Lloyd, were taken in partnership under the firm name of William H. Cole & Sons, which continued to the time of his death. He suffered a partial stroke of paralysis several years ago, since which he has given less personal attention to business than formerly.

Mr. Cole was successful in the accumulation of a fortune in his business, and in a larger sense was successful in commanding by real merit the affectionate esteem of all who were so fortunate as to know him. He was of a quiet nature, attentive to business, mixing but little in politics, and finding his greatest pleasure in his home life with his family. For a generation the name of William H. Cole has stood for all that is honorable and generous in business and faithful and steadfast in friendship. He leaves a widow and four sons and two daughters to mourn their loss, and a host of friends to whom his name and memory will be a pleasant recollection.

His funeral was held at his late residence, on Monument street, on Wednesday afternoon at 4 o'clock, and his remains were followed to their final rest in Spring Brook Cemetery by a large number of friends.

The committee appointed by the Hardware Board of Trade to prepare suitable minutes in regard to the death of Joseph B. Spencer and Launcelot S. Gurney submitted the following resolutions, which have been elegantly engrossed by Charles Rollinson, 240 Broadway, New York, in handsome albums with covers of seal leather and white silk lining. The resolution with reference to Mr. Spencer is as follows:

At a meeting of the committee appointed by the Hardware trade of this city for the pur-

pose of passing appropriate resolutions relative to the death of Joseph B. Spencer, it was

Resolved, That by his death the Hardware trade has sustained the loss of one of its most active and brilliant men, whose ability and business qualities were of a high order. Many large business undertakings of grave importance were placed in his charge and achieved success under his skillful management. He was widely known, and his manly character, fairness and warmheartedness endeared him to all who knew him. His death brings sorrow to his many friends.

Resolved, That we offer this sincere tribute of love and esteem to the memory of our departed friend, and to his bereaved family tender our warmest sympathy and condolence in this their affliction.

Resolved, That a draft of the foregoing resolutions be suitably embodied in a memorial album and forwarded to his family.

The following is the text of the minutes in regard to Mr. Gurney:

At a meeting of the committee appointed by the Hardware trade of this city for the purpose of passing appropriate resolutions relative to the sudden taking off of our young and esteemed friend, Launcelot Samuel Gurney, it was

Resolved, That by his death the trade has sustained the loss of one of its rising and brilliant young men, whose ability and business qualifications were very promising. His sudden demise comes with admonition, and brings sorrow to his many friends.

Resolved, That we offer this sincere tribute of love and esteem to his memory, and to his estimable father and bereaved family tender our warmest sympathy and condolence in this their sad affliction.

Resolved, That a draft of the foregoing resolutions be suitably embodied in a memorial album and forwarded to his family.

The Texas Anti-Trust Law.

As there has been a good deal of question among manufacturers and their representatives in regard to the object and scope of the law recently passed in Texas concerning the sale of goods, the manufacture or marketing of which is controlled by trusts or combinations, the text of the law which was published in our last issue was read by them with much interest. Many of them had heard rumors in regard to the enforcement of the law, and that, apprehending its enforcement, travelers were leaving the State, so that there has been a good deal of question as to the exact status, and whether or not it would be prudent to offer goods that belong to the classes against which the statute is aimed.

An examination of the text of the law will convince our readers that it is exceedingly sweeping in its scope, and strictly interpreted and enforced would prevent the sale of many lines of Hardware; anything, in fact, the manufacture or sale of which is controlled by agreement or understanding between the manufacturers would come under its restrictions and would make the salesman representing the manufacturer or jobber liable to the severe penalties laid down. Its object is evidently to weed out and thoroughly eradicate from the State everything that is tainted with the spirit of a trust or combination. Indicating the way in which it is regarded, we have the following advices from a prominent wholesale Hardware house, who in reply to an inquiry on this subject say: "Our attorneys appear to agree that any agent traveling in the interest of a combination from outside the State offering to sell their goods would be violating its provisions, and manufacturers and combination dealers of Screws, Carriage Bolts, Steel Goods, Ammunition, Fire-Arms, &c.—under their present status—come under the law." An examination of the law enforces the conclusion that this interpretation is the correct one, and there can be little doubt that it is the one which, when the law is tested, will be upheld by the courts.

The practical question, then, for those who desire to sell combination goods in Texas is a double one. First, as to the probability of the law's being enforced, and, second, as to its constitutionality.

As indicated in the remarks upon this question in our last issue, it is probable that when the law is contested its unconstitutionality will be declared, and our advices from intelligent business men in Texas point in the same direction, it being confidently predicted that it will be nullified in the courts. This is a matter, however, in which it will be necessary to wait until the law is actually tested.

It would appear that it will not be necessary to wait long for this. Our advices are that the Attorney-General of the State will probably enforce the law to the best of his ability until it is pronounced unconstitutional, so that it is likely that before long a case will arise which will determine the matter. In the meantime the existence of the law and the possibility of serious annoyance to salesmen who are arrested under its provisions will naturally have some effect in deterring the offering of the prohibited goods in that State.

But as giving a succinct view of the situation, the following letter from a representative wholesale Hardware House in that State will be of interest:

1. The law was passed in response to the well-known popular clamor against the bugbear, "trust." In order to throw a sweet morsel at the feet of an influential class of voters, farmers and stock-raisers are privileged to combine under the statute, while other classes are prohibited under severe penalties. The object of the law, it seems to me, is to give the farmers an opportunity to buy their supplies in the chapest market and sell their products in the dearest. I doubt very much, however, that even our shrewdest farmers will ever build any brown-stone houses or spend their summers in Saratoga or Long Branch by virtue of the privileges conferred upon them by this law.

2. I am not a lawyer, yet I do not hesitate to pass my opinion that Hardware salesmen are absolutely safe in offering any combination goods for sale in Texas.

3. I cannot positively assert that the law is in force; neither can I say it is a dead letter. So far no case has been tried under the statute. An association of fire-insurance agents made direct inquiry of Attorney-General Hogg, and his answer was that he would enforce the law. They proposed to make a test case, which he declined. They then obtained a legal opinion from a prominent law firm of Dallas, according to which the law is unconstitutional and would not be enforced by the courts. The insurance association dissolved. In spite of this fact, and also the fact that Hogg threatens to enforce the law against all trusts and combines, the weight of legal opinion seems to be that the law will not be enforced by the courts. Public opinion is against the law and ridicules it, hence it would be difficult to find a jury to convict any one.

It would be unjust to judge Texas by her legislative enactments. The inadequate compensation that our constitution provides for our legislators does not secure as good material as a great State should have. It is safe to say that the ablest citizens of Texas and those most competent to enact laws are far more numerous out of the Legislature than in it.

Miscellaneous Prices.

The following are the prices of Apple-Parers made by C. E. Hudson, Leominster, Mass.:

	Per doz.
Rocking Table	$5.25
Little Star	4.00
Daisy	3.75

We are advised that some improvements have been made in these machines in the way of correcting any weaknesses or defects which have been discovered. Among these it is mentioned that the coring-tube is now so securely fastened into the slicing-knife that there is no possibility of its becoming loose. Orders are referred to as coming in very satisfactorily, requiring the running of the works night and day.

L. A. Sayre, Newark, N. J., in addition to the Apple-Parers he has previously been offering puts on the market this season a new machine, the Favorite, which is referred to as being well received. The following are the machines he is making and the prices at which they are sold:

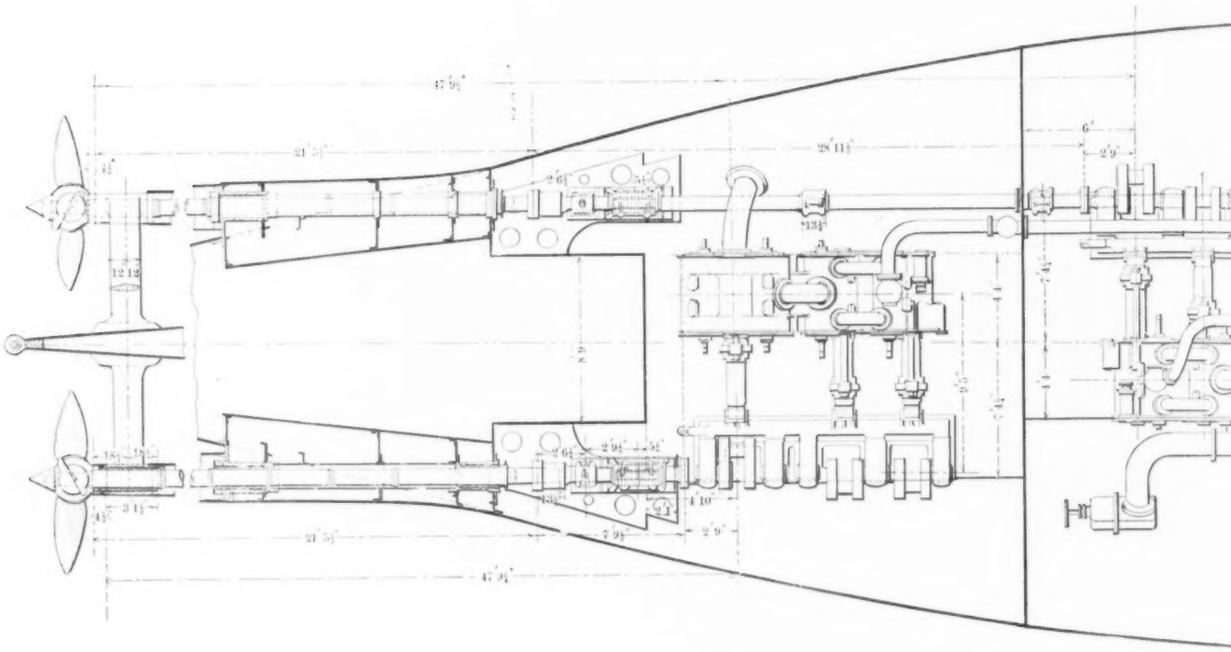
	Per doz.
Monarch Peach and Apple Parer	$13.50
Waverly Apple Parer	4.00
Ideal Apple Parer	4.00
Favorite Apple Parer	5.00

The following revised United States standard list of Chamfered, Trimmed and Reamed Hot-Pressed and Cold-Punched Square or Hexagon Nuts was adopted by the association June 15:

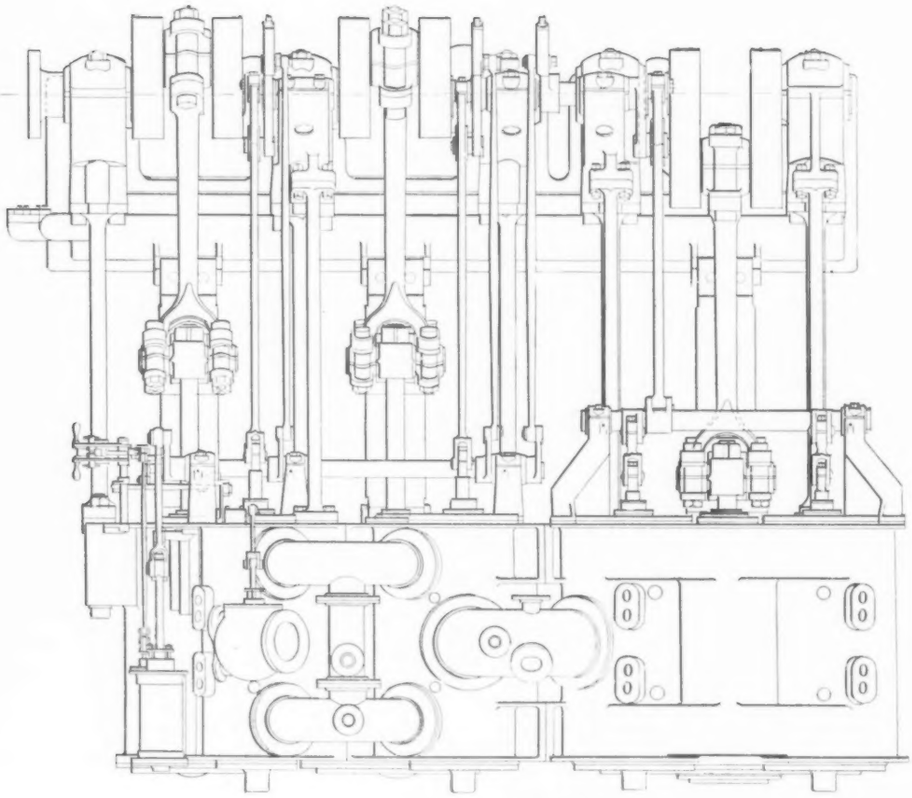
Wide.	Thick.	Hole.	Bolt.	Square. Cents per pound.	Hexagon. Cents per pound.
1/2	1/4	13/64	1/4	20.0	27.0
13/32	5/16	1/4	5/16	18.0	24.0
11/16	3/8	13/64	3/8	14.5	18.5
25/32	7/16	11/32	7/16	14.0	18.0
7/8	1/2	25/64	1/2	11 3	14.0
31/32	9/16	29/64	9/16	11.3	14.0
1 1/16	5/8	33/64	5/8	10.0	12.5
1 1/4	3/4	5/8	3/4	9.4	10.9
1 7/16	7/8	47/64	7/8	9.4	10.9
1 5/8	1	27/32	1	9.4	10.9
1 13/16	1 1/8	1 5/16	1 1/8	9.4	10.9
2	1 1/4	1 1/16	1 1/4	10.1	11.5
2 3/16	1 3/8	1 5/32	1 3/8	10.3	12.0
2 3/8	1 1/2	1 9/32	1 1/2	10.7	12.6
2 9/16	1 5/8	1 3/8	1 5/8	11.1	13.2
2 3/4	1 3/4	1 1/2	1 3/4	11.5	14.0
2 15/16	1 7/8	1 5/8	1 7/8	12.0	14.5
3 1/8	2	1 23/32	2	12.0	14.5
3 5/16	2 1/8	1 13/16	2 1/8	12.5	15.0
3 1/2	2 1/4	1 15/16	2 1/4	12.5	15.0
3 7/8	2 1/2	2 3/16	2 1/2	13.5	16.0
4 1/4	2 3/4	2 7/16	2 3/4	14.0	16.5
4 5/8	3	2 11/16	3	14.5	17.0

The Fred J. Meyers Mfg. Company, Covington, Ky., have issued an imposing and comprehensive descriptive catalogue of the goods they manufacture. It relates to a large assortment of Wire Goods, Bird-Cages, Wire-Cloth, Iron Fencing and Railing, Iron Shutters, Roof Cresting and Architectural Iron-Work, Hardware Specialties, &c. In these different lines a number of new goods are exhibited. Prominent place is given to Hunter's well-known Flour-Sifters. The extent of goods covered by the volume is indicated in the following discount sheet, terms 60 days, or 2 per cent. discount for cash in ten days:

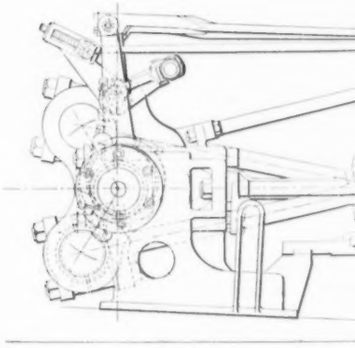
Page.	Discount. Per cent.
4–9, Bird-Cages	50
4, Mocking-Bird Food	50
7, Bird-Nests	50
8, Squirrel-Cages, tin and wire	50
10, Japanned and Brass Bird-Cages (see special list)	50
11–13, Brackets and Spring	33⅓
13, Paper-Files	33⅓



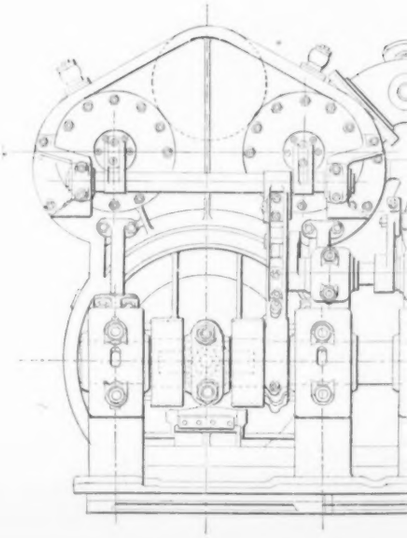
PLAN VIEW THROUGH SCR



PLAN VIEW OF ENGINES.



SIDE EL



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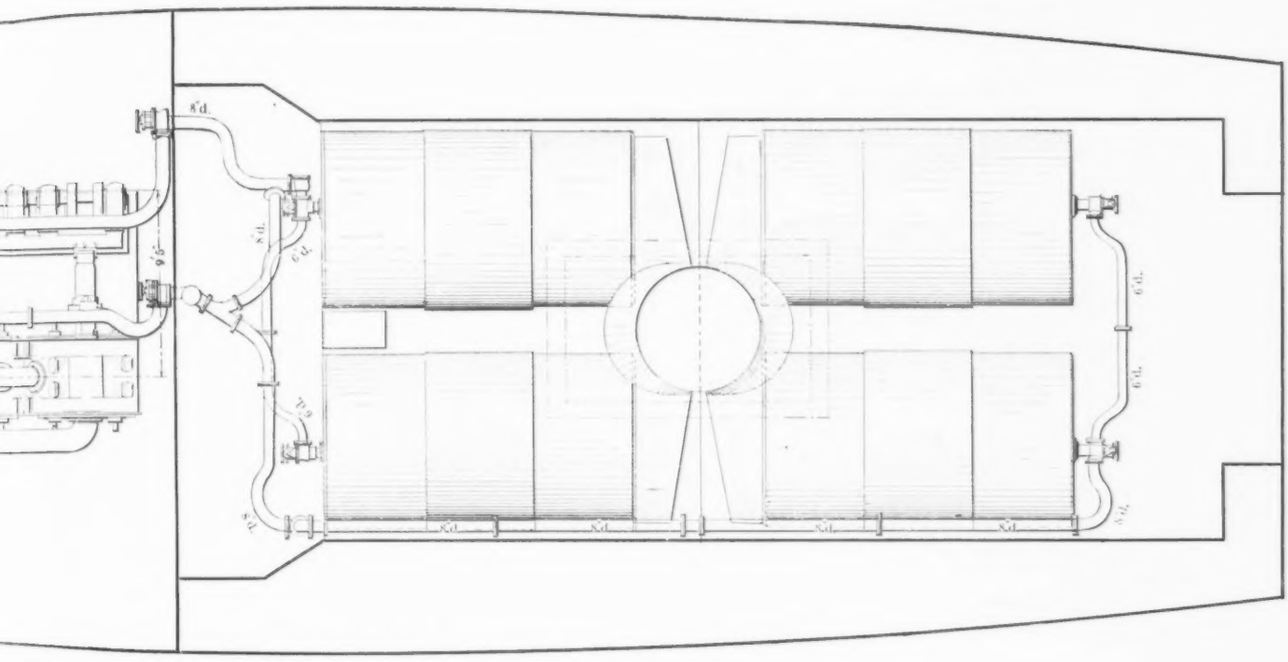
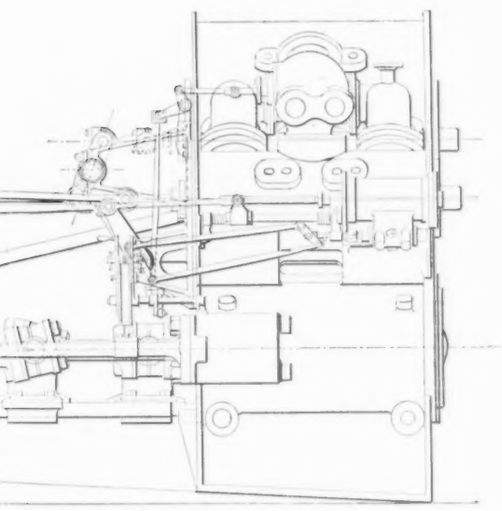
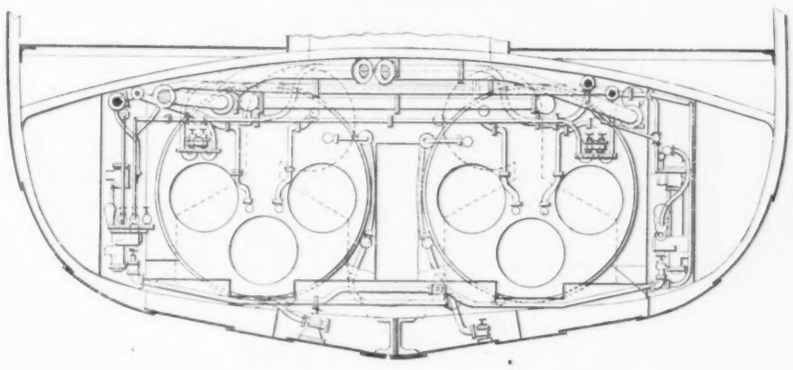
ENGINES AND BOILERS OF THE U. S. GUNBOATS "CONCORD" AND "BENNINGTON."



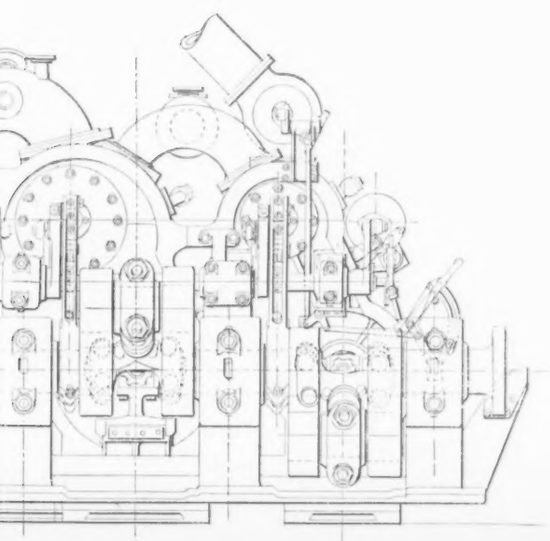
REWS, ENGINES AND BOILERS.



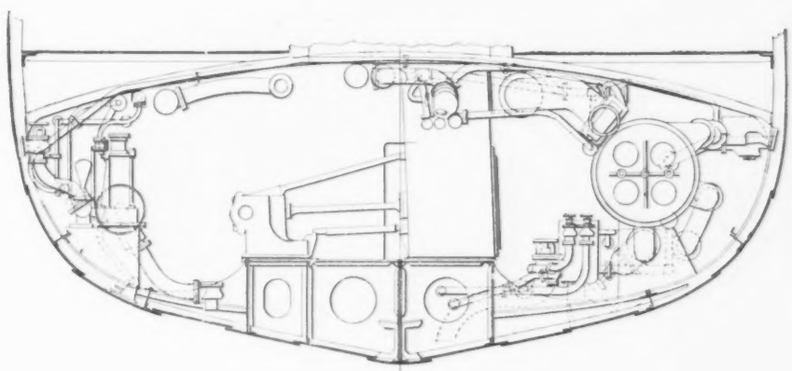
LEVATION OF ENGINES.



CROSS SECTION AT BOILER.



EVATION OF ENGINES.



CROSS SECTION THROUCH FORWARD ENGINE.

Built by Quintard Iron Works—N. F. Palmer, Jr., & Co.

14, Wood-Rim Sieves.....50
14, Tin-Rim Sieves.....65
15, Sifters and Cyclone Egg-Beaters.....50
16, Riddles, grain, miners' and foundry...33⅓
16, Sand and Lime Screens.....33⅓
17, Peerless and Coal Screens.....33⅓
18, Ash-Sifters.....33⅓
18, Revolving Coal Screens.....33⅓
19, Steel-Wire Brushes.....33⅓
20, Rat and Mouse Traps.....33⅓
21, Rat-Traps.....33⅓
22, Plant-Cover and Cutlery-Holder.....33⅓
22, Fish-Traps.....33⅓
23, Fly-Traps.....33⅓
23, Round Dish Covers.....60
23, Oval Dish-Covers.....40
24, Wire Broilers.....50
25, Egg-Beaters and Potato-Mashers.....50
26, Pot-Cleaners and Boilers.....50
26, Chip-Fryers.....50
27, Corn-Poppers (write for prices).
27, Bread-Toasters.....50
28, Horse and Dog Muzzles.....50
28, Spout-Protectors.....50
29, Clothes-Lines, Wire Rope, Picture-Cord and Hair-Wire.....33⅓
30, Poultry-Coops.....30
31, All goods on this page except Cut-off..33⅓
31, Howell's Cut-off.....45
32, 33, All goods on these pages.....50
34, 35, Spark and Store Guards and Fenders.50
36, 37, Brass Fenders and Fire-Guards.....50
38, Wire-Cloth Reel.....20
39, Barrel-Covers and Nut-Holders.....50
39, Wire Baskets.....50
40–43, Conductors' and Ticket Punches.....30
43, Cattle-Punch.....30
44, Belt and Spring Punches.....30
45, Saw-Sets and Saw-Vises.....30
45, Bench-Shears, Box-Scrapers.....30
46, Cigar-Box Openers, Knives and Butt-Cutters.....30
46, Spoke-Shaves.....30
47, Door-Bells.....30
47, Pliers.....30
48, Pruning-Shears.....30
49, Can-Openers and Mincing-Knives.....30
50, 51, Wire Trellises and Trainers.....45
51–53, Wire Moss-Baskets.....45
54, 55, Designs for Floral Work.....25
56, 57, Wire and Iron Chairs and Settees...25
58, 59, Wire Chairs and Settees.....25
60, Iron Vases.....25
61, Wire Grave-Guards.....15
62, Wire Summer-House and Light Wire Railing.....25
63, Wire Summer-House and Wire Border..25
64, Lawn Fountain and Sprinkler.....25
65–69, Flower-Stands.....50
70, Wire-Cloth, in full rolls.....60
70, 73 and 76, Galvanized Cloth, in full rolls..40
71–74, Wire-Cloth, full rolls.....60
74, Wire-Lathing Cloth.....60
75, Wire Window-Screens, walnut frames..30
76, Brass, Copper and Tinned Cloth.....50
76, Brass Milk-Strainer Cloth.....45
77, Spark-Arrester (write for estimates).
78–81, All goods on these pages.....25
82–85, Wire Signs.....25
86, 87, Stall Partitions.....30
88, 89, Stable Fixtures.....30
90–92, Stable Fixtures.....30
93–101, Copper Weather-Vanes.....30
102–109, Roof Cresting and Finials.....30
110–115, Wire Window-Guards and Gates...30
116, 117, Elevator Wire-Work.....30
118, Elevator Brass-Work.....25
119, Wire and Iron Theater-Railing.....25
120–142, Bank and Counter Railings and Wickets.....25
143, Store Tools and Counter-Supports.....25
144, Wire, at market rates.
145, Hexagon Twisted Fencing.....50
145, Wire Gates, single and double.....30
145, Twisted Wire Fence.....65
146, 147, Galvanized Twisted Wire-Netting.65
148–157, Wire Fencing and Fences.....25
158–191, Wrought-Iron Fences.....20
192, 193, Wrought-Iron Gates.....20
194, Wrought-Iron Drive Gate and Arch...20
196, Vault-Gate (write for estimates).
197, Tubular Gates.....20
198, Tubular Iron Fence and Gate.....20
199, 200, Tubular Iron Fence.....20
201, Ornamental Cemetery-Fence.....20
202, 203, Iron Balcony-Railing.....20
204, Basket Balcony-Railing.....20
205, Iron Steps and Railing.....20
206, 207, Iron Stairs (write for estimates).
208, Circular Iron Stairs (write for estimates).
209, Iron Balcony Fire-Escape.....20
210, Hitching-Posts and Tree-Boxes.....20
211–215, Iron Bedsteads.....20
216–220, Jails and Jail-Cells (write for estimates).
221, 222, Iron Verandas.....20
223, Bostwick's Folding Gates and Guards (write for estimates).
224, Wrought-Iron Window-Guards.....20
225, 226, Iron Store-Fronts (write for estimates).
227, Iron Coal-Holes.....20
227, Iron Gutter-Pipe.....20
227, Iron Stair-Plates.....20
227, Ornamental Scroll.....20
228, Ventilating-Grates.....20
228, Wrought-Iron Grating.....20
228, Illuminating Sidewalk-Lights.....20

Cordley & Hayes, 173 and 175 Duane street, New York, have made a change in the price of Indurated Fiber-Ware. Prices heretofore have been quoted net to the trade, and the change is in making a long or retail price, which is subject to a trade discount of 25 per cent., the net price being about as before. The advantages of this change will be appreciated by both the jobbing and retail trade.

The following are the discounts of the Bonney Rapid Vise Company, Clinton, Iowa, which were given by a typographical error out of their connection in our last issue:

	Discount.
Rapid Vises and Attachments	25 %
Giant Vises	30 %
Giant Vise and Drill Combined	35 %
Eureka Vise	50 %
Steam-Fitters' Vise	30 %
Never-Slip Combination Pipe and Bench Vise	25 %
All-Steel Open-Pipe Vise	25 %

The market for both Manila and Sisal Rope is devoid of strength, and slightly lower prices are made without any open change of quotation. One reason for the weakness in Sisal is that a good many of the manufacturers are using New Zealand Hemp, which is not so strong and costs less.

Items.

Campbell & Atkinson, successors to James Campbell, Seattle, Wash. Ter., are moving vigorously in the direction of a resumption of business since the destruction of their store by the late fire, and have, we understand, been placing some large orders with Western houses. They request us to announce to manufacturers and jobbers that they will be glad to receive catalogues and price-lists, as all of theirs were destroyed in the fire. We do not doubt that in response to this invitation manufacturers will be glad to place at their disposal an extensive variety of trade literature, especially as they are located in a section the business of which is rapidly developing.

Ætna Powder Company, 55 Dearborn street, Chicago, Ill., issue circulars describing their various manufactures in the Explosive line, including Nitro-Glycerine, Detonating Caps, Electric Blasting Appliances, Electric Exploders, Improved Reel-Box and Cable for blasting with Magneto-Electric Batteries and Victor Magneto Blasting-Machine.

The George Worthington Company, Cleveland, Ohio, have issued a Gun circular, in which Shotguns, Rifles and Revolvers in good variety are shown, with a representation of many leading goods. A number of pages are also devoted to Ammunition, Gun Implements, &c., and some information is given in regard to Police Hardware. In the introductory circular suggestions are made in regard to ordering goods, and it is especially pointed out that Hardware dealers can include their orders for Arms with those for Hardware.

Yale & Towne Mfg. Company, Stamford, Conn., and 84 Chambers street, New York, issue a very neat miniature pamphlet entitled "A Key to Good Locks," in which they allude to the special features of their goods and give also a good deal of information of general interest. Its matter is good, it is tastefully printed in black and red and will doubtless serve its purpose well.

The Pullman Sash Balance Company, Rochester, N. Y., desire us to contradict the report that they have been restricted from manufacturing and selling their Sash-Balances. This statement, they advise us, is incorrect, and was probably given rise to by the fact that an injunction was served on Kellogg, Johnson & Bliss, Chicago, Ill., restraining them from selling the Balance, which they are manufacturing as usual and selling to other parties.

Howard W. Peak, formerly of Henry & Peak, Fort Worth, Texas, has opened an office and salesroom at 506 Main street, where he represents the following manufacturers: Thos. Scantlin & Son, Stoves, Mantels and Sorgho Machinery; C. Sidney Shepard & Co., Tin-Ware and House-Furnishing Goods; Yost, Bigelow & Co., Wagon and Buggy material; the Sneider & Trencamp Company, the Reliable Vapor Stove; the Forsyth Scale Company; the Cincinnati Safe and Lock Company. Mr. Peak desires to state to the trade that he will be pleased to quote prices on any of the lines handled by him, and extends a cordial invitation to his friends to visit him when in the city. He intends also to call upon his customers in season for the fall trade.

Maryland Tack Company, Baltimore, Md., have opened a branch office at 186 and 188 South Fifth avenue, New York, which will doubtless serve the convenience of the trade. Among the circulars relating to their Tacks is one describing their method of putting up their Monumental Steel Carpet-Tacks, an assortment of Tacks suitable for retailers, packed in attractive boxes.

The King Powder Company, Cincinnati, Ohio, report that their business, especially in fine Sporting-Powder, is increasing rapidly, and they are constantly improving their line of manufacture.

Reading Hardware Company, Reading, Pa., and 81 Reade street, New York, issue a circular describing the Acme Wire Coat and Hat Hooks, a new line which they have recently put on the market. The form of the Hook is shown in their circular and price-list is given. The goods are furnished coppered, tinned, japanned and in brass.

The Standard Fiber Ware Company, Mankato, Minn., have established an agency for the sale of their Flax Fiber-Ware at Columbus, Ohio, in charge of John Bane & Co., who will carry a large assortment of these goods and be prepared to fill orders direct from their warehouse in the territory tributary to Columbus. We are informed by the manufacturers that they are having a large demand for these articles, their lightness and durability being referred to as making them desirable household goods, and being nicely decorated in oil colors, they are ornamental as well as useful.

The Treasure Box advertised on page 92 will attract the attention of the trade. It is manufactured by the Henry C. Hart Mfg. Company, Detroit, Mich., and is described as finished in highly polished brass with antique relief. It is expected that it will be received with favor.

Jacob Holberg & Son, Macon, Miss., in connection with their Hardware business, are manufacturing the Hunter Hay-Press, which is described in circulars which they issue concerning it. Its strength, simplicity and cheapness are points which they emphasize.

Clement & Brown Mfg. Company, Bangor, Maine, issue a price-list of Cans. It relates to Nelson's Patent Crated Can, the Nelson Shipping-Can, Oyster-Cans and Druggists' Cans. Another circular refers to the Decrow Portable Hot-Air Furnace.

The Philadelphia Exhaust Ventilator Company, 520 Commerce street, Philadelphia, issue a pamphlet relating to Cooling-Fans and illustrate a number of various styles which they are now manufacturing. They refer to the fact that during the time they have been manufacturing the well-

known Blackman Exhaust-Fan and other ventilating apparatus, they have had repeated inquries from architects and others for Fans to create a cooling breeze that could be distinctly felt, and where it was not necessary that any ventilation should be accomplished. To meet this demand these Fans have been put on the market.

The Type-Writer department of the Pope Mfg. Company, Boston, Mass., have issued a very neat pamphlet in which they give a number of testimonials in regard to the World Type-Writer.

The Ohio Powder Company, Youngstown, Ohio, issue a card circular describing their line of Powder, including both Blasting and Sporting Powder, the different brands being shown.

One of our correspondents desires information as to where Ketchum's Flush Sash-Lifts can be found. We shall be glad if any of our readers can give this information.

Humphrey Tool Company, Warren, Mass., have issued a new edition of their price-list which represents their line with its latest additions. It thus presents to the trade an interesting variety of new and ingenious tools. Among them is the improved Awl-Haft represented on page 30.

Base-Ball.

On Saturday last, June 29, teams made up of employees of Manning, Maxwell & Moore, 111 and 113 Liberty street, and of Smith, Lyon & Field, 139 Duane street, New York, played a game of base-ball at the Prospect Park Parade Grounds, the former winning, as per the following score:

	1	2	3	4	5	6	7	8	9	10	Total.
Manning, Maxwell & Moore.	6	4	0	4	1	0	1	2	1	1	20
Smith, Lyon & Field	6	0	4	1	4	1	1	1	1	0	19

We are advised that the base-ball clubs of the Richards & Conover Hardware Company and the Kansas City Hardware Company, Kansas City, Mo., played a match game of ball June 22, which resulted 7 to 6 in favor of the Richards & Conover Hardware Company nine. The game, we understand, was an excellent one and some very fine plays were made on both sides.

Exports.

PER BARK CARRIE HECKEL, JUNE 8, 1889, FOR PORT ELIZABETH, AUSTRALIA.

By Coombs, Crosby & Eddy.—85 dozen Wood Handles, 26 Meat-Choppers, 19½ dozen Carpenters' Tools, 150 pounds Iron Tacks, 66 pounds Oil Stones, 3 Shellers, 6 Churns, 8 dozen Axes, 30 sets Hubs, 12 dozen Peach-Peelers, 1 Type-Writer.

By Corner Bros. & Co.—500 Spokes, 19 dozen Tools.

By R. W. Forbes & Son.—2000 Paper Caps, 1 gross Blacking, 1 dozen Meat-Choppers.

By Arkell & Douglas.—½ dozen Shellers, 2 cases Carriages, 8 cases Machinery, 1 Buggy, 1½ dozen Sewing-Machines, 2 cases Saws, 1 Buggy, 3000 Fuse, 4 cases Hardware, 30 dozen Picks, 1 case Wooden Ware, 1 case Ladders, 300 Handles, 9 crates Churns, 1 case Meat Safes, 1 case Hardware, 2 cases Handles, 5 packages Barrows, 1 case Hose, 6 cases Fruit Jars, 1 box Nails, 5 packages Hardware, 3 cases Pumps, 560 feet Hose, 9 cases Axles, 24 packages Barrows.

By W. H. Crossman & Bro.—8000 pounds Nails, 8 gross Shade-Rollers, 40 dozen Hardware, 40,000 Cartridges, 2 cases Hardware, 15 dozen Washstands, 5 Scales, 35 Churns, 104 Plows and Parts, 17,000 pounds Nails, 5783 pounds Sisal Rope, 6233 pounds Manila Rope, 20 dozen Hammers, 20 Ladders, 2 cases Mouse Traps.

PER BARK SPECULANT, JUNE 11, 1889, FOR ADELAIDE, SOUTH AUSTRALIA.

By McLean Bros. & Rigg.—24 dozen Atomizers, 4 gross Lead-Pencils, 4 packages Sporting Goods, 54 Pumps, 2 cases Lamp Goods, 1 gross Shoe-Blacking, 3 dozen Braces, 1000 Cartridges, 4 Boring-Machines, 60 pounds Bolts, 6 dozen Forks, 1 gross Shoe-Blacking, 5 dozen Saws, 1 Harvesting Machine and Parts, 6 gross Lamp Chimneys, 1 gross Potato-Peelers, 8 dozen Braces, ½ dozen Pumps, 2 dozen Hammers, 1 case Plated-Ware.

By Arkell & Douglas.—25 boxes Clothes-Pins, 6 bundles Wash-Boards, 5 dozen Axles, 1 case Wringers, 6 cases Axles, 1 dozen Meat-Cutters, 1 case Saws, 1 cask Pumps, 17 cases Axles, 1 crate Blacking, 1 case Tin-Ware, 20,000 Cartridges, 3 boxes Coffee-Mills, 351 reels Barb-Wire.

By W. H. Crossman & Bro.—100 boxes Clothes-Pins, 44 gross Wicks, 15 dozen Locks, 15 dozen Wrenches, 2 cases Hardware, 4 cases Hardware, 6 dozen Hatchets, 89 dozen Hay-Forks, 8 dozen Rakes, 12 dozen Axes, 12 dozen Hatchets.

By Mailler & Quereau.—1 case Forks, 2 cases Hardware, 180 dozen Axe-Handles, 2500 Broom-Handles, 24 dozen Axe-Handles, 10 cases Perambulators.

By R. W. Forbes & Son.—42 dozen Whip-Keeps, 22 dozen Whips, 6 gross Whips, 2 cases Hardware, 40 boxes Sewing-Machines, 1 case Hardware, 1 dozen Mangles.

By Winchester Repeating Arms Company.—148 pounds Guns, 24 sets Tools, 250,000 Primers, 10,000 Shells.

By Ansonia Clock Company.—3 boxes Clocks.

By Meriden Britannia Company.—4 boxes Plated-Ware.

By Joseph Dixon Crucible Company.—8305 pounds Crucibles.

By Fairbanks & Co.—1884 pounds Scales, 968 pounds Scales.

By Barden & Ackerman.—4 cases Hardware.

By Strong & Trowbridge.—200 reels Barb-Wire, 20 cases Axes, 5 cases Choppers, 1 case Steam-Fitting Goods, 1 case Hardware, 8 barrels Lamp-Ware, 1 barrel Lamp-Ware, 1 case Traps, 1 case Lamp-Ware, 1 case Belt-Hooks.

By Healy & Earl.—5 Portable Forges and 6 cases Fixtures.

By White Sewing Machine Company.—98 Sewing-Machines and Parts.

By Edward Miller & Co.—14 packages Lamp Goods.

By H. W. Peabody & Co.—6 Lawn-Mowers, 19 packages Lamp-Ware, 1 case Perambulators, 1 bundle Stamped-Ware, 1 case Shade-Rollers, 14 packages Hardware, 36 dozen Handles, ½ dozen Wringers, 2 cases Perambulators, 1 case Wire Cloth, 6 dozen Wash-Boards, 3 packages Traps, 500 Handles, 3 packages Lamp Ware, 650 feet Belting, 6 cases Shade-Rollers, 282 packages Hardware, 1 crate Sinks, 30 packages Lawn-Mowers, 56 pounds Welding Compound, 17 cases Clocks, 28 dozen Thermometers, 4 cases Lamp-Ware, 36 packages Blacking, 98 bundles Wash-Boards, 5 packages Toys, 30 cases Perambulators, 6 cases Sewing-Machine Oil, 1 case Strops, 360 feet Hose, 9 packages Agricultural Implements, 1 case Paints, 72 packages Barrows, 1 case Carpet-Sweepers, 148½ dozen Handles, 27 cases Wringers, 3 cases Stoves, 3 cases Tacks, 5 packages Carriage-Ware, 36 dozen Glue, 11 cases Bolts, 45 packages Stoves, 15 gross Pencils, 2 cases Axles, 24 cases Sewing-Machines, 51 packages Hardware, 28 dozen Shovels, 400 feet Hose, 500 Handles, 1 case Shade-Rollers, 3 cases Fire-Arms, 13 packages Lamp-Ware, 116 pounds Varnish, 2 crates Churns, 5 dozen Wringers, 1 case Stamped-Ware, 10 packages Clocks, 2 cases Glue, 3 packages Traps, 3 cases Perambulators, 30 bundles Wash-Boards, 1 case Traps, 5 cases Hardware, 4 cases Agricultural Implements.

REVIEW OF THE WHOLESALE MARKET IN PAINTS AND OILS.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

Paints and Colors.

Business in the Paint and Color trade has been rather slow. The general report, however, is that the movement of the leading staples compares favorably with what is customary at this season of the year, and, for most articles, prices are very steady. The high cost of Pig-Lead and the strong position of the market serve to cause buyers of White Lead to take hold with confidence, and Zincs are taken with a fair degree of liberality also, in view of the favorable conditions prevailing. The run of duplicate orders for Paris Green is somewhat disappointing, but the association rates are firmly adhered to. Nothing new has developed regarding Lead Trust absorptions, and there seems still to be a doubt that the Atlantic company have entered the trust fold. A rumor has circulated to the effect that efforts have been made to organize a Zinc trust, but up to the present time no good foundation for the rumor can be traced out. American Zincs, it is of interest to note, have remained stationary in value, although French and Dutch are higher.

White Lead.—Both manufacturers and jobbers experience some falling off in the demand, such as is usual at this season of the year. Still, the volume of business appears to fully meet expectations and the market retains a strong tone. The comparatively strong market for Pig-Lead has some bearing upon the pigment, but a close adjustment of production to the requirements of the trade is the most potent influence.

Zinc.—American Zinc remains very steady at former prices and is meeting with fair sale. Foreign Zincs are in remarkably good demand and strong. The following announcement explains itself:

OFFICE OF J. LEE SMITH & CO.,
59 FRANKFORT STREET,
NEW YORK, July 1, 1889.

We beg to offer you Vieille Montagne French Zinc at the following prices and discounts, and will be pleased to have the preference on your orders:

Dry.

Antwerp Red Seal	6½
Antwerp Green Seal	7
Paris Red Seal	6¾
Paris Green Seal	7½

Ground by the V. M. Company in Poppy-Seed Oil.

	In drums of 110¼ pounds.	In cases of four boxes of 27, 56⅛ pounds each.
Red Seal in lots of less than 1 ton	8¾	9¼
Red Seal in lots of 1 ton and over	8¼	9
Green Seal in lots of less than 1 ton	9⅛	10⅜
Green Seal in lots of 1 ton and over	9⅝	10⅛

Buyers of 10-barrel lots of one or mixed grades are allowed 1 per cent. discount.

Buyers of 25-barrel lots of one or mixed grades are allowed 2 per cent. discount.

Buyers of 50-barrel lots of one or mixed grades are allowed 4 per cent. discount.

The above discounts include the brokerage.

Colors.—The demand for Paris Green is rather below expectations, the requirements for potato-bug extermination having fallen considerably short as compared with previous seasons. Stocks have accumulated on manufacturers' hands to some extent, but nothing has occurred to cause any departure from the association prices or terms. Vermilion remains very firm, and there is a fairly good trade in the article, in Carmine and in Venetian Red. Litharge is moving to a fairly good extent, but Red Lead is rather slow. Other colors are quiet and moving at about former prices.

Miscellaneous.—Block Chalk in bulk continues dull and prices are nominal, with $2.50 @ $2.75 ₱ ton apparently full rates for round lots, ex-ship. Whiting is reported selling at very low prices in the Western market, but none but moderate concessions seem to be made here. For Paris White there is about the routine demand and prices show no important variation. Barytes sell at within the former range of prices, but to a moderate extent only. Talc is barely steady and rather slow. Practically the same is to be said of Terra Alba.

Animal and Vegetable oils.

The market for nearly everything in this line has been very quiet the past week. The requirements of jobbers and large consumers have necessitated no purchases on a large scale. Nothing has transpired to promote speculative operations, and export orders have been not only few in number, but small. The scarcity and high price of raw material prevent any reaction in the price of Linseed Oil, and a some-

what improved demand has acted as a support to Lard Oil. With these exceptions the conditions afford buyers more or less advantage, and prices for other Oils than those specified are rather easier at the present time than they were a week ago, although showing no radical changes.

Linseed Oil.—Cable advices from London reveal an advance of 1/ ℔ cwt. the past week in the price of Calcutta Linseed, and the cost of domestic seed for future delivery is also higher. Coupled with the fact that barely enough seed is coming forward to meet manufacturers' wants, the price of Oil remains strong. There is a good steady consumption, and the indications are that the supply will continue moderate the next six weeks at least.

Cotton-Seed Oil.—In this line of Oils there has been little or nothing doing outside of a fair jobbing trade. The "trust" consigns nearly enough Oil to European ports to supply the entire foreign requirements, and home consumers are buying very cautiously, in view of the near approach of the new season and the low average quality of the stock now on offer. Prices are quoted about the same as last week, but it is even more difficult for sellers to trade except at concessions.

Lard Oil.—Popular brands of city present-make prime, such as Macy's, has been selling rather more freely, and the market is showing somewhat improved tone. The crude material has averaged somewhat higher than during the preceding week, and present appearances indicate a further rise rather than any movement in the opposite direction. For round lots 54¢ will yet be accepted, but jobbing quantities bring ½¢ @ 1¢ more. Baltimore Oil was offered at 52¢, f.o.b., equal to 53¢ here.

Menhaden Oil.—The fishing on the New England Coast and on the sound has been unimportant as yet. Pending later developments, holders offer new Oil indifferently, and the value of crude is unsettled. The Pressed and Bleached Oils are moving slowly, as are also Tanners' Oils at about 2¢ under last week's prices. About 3000 barrels crude, old and new, have been sold at 22¢ @ 23¢, for export.

Sperm Oil.—The reduction on manufactured Oils some little time ago brought prices down to a parity of about 65¢ for crude, the figure at which last sales were made. The demand is running light at present, but the market is fairly steady at previous quotations.

Whale Oils.—Several hundred barrels of crude have been purchased in the East by manufacturers and a more liberal supply of manufactured Oil is assured. As yet, however, no revision of prices has been made, although the market looks rather weaker.

Olive Oil.—Importers are not now competing as sharply for business as they were during the greater portion of June. There is quite enough "feeling" to keep prices low, however, and 64¢ @ 65¢ will buy either Spanish or Italian in round lots.

Cocoanut Oil.—The moment of spot stock has continued to begin and end with small lots. Prices are practically the same as current last week, but Ceylon product may be had, to arrive, at ½¢ @ ¾¢ under the spot prices.

Cod Oil.—For Cod Oil the demand has been light and wholly of a jobbing character, with previous prices ruling on both foreign and domestic.

Red Oils.—Neither Saponified or Elaine have found buyers in other than in jobbing quantities, but both articles are held quite firmly.

As we go to press we are advised that the discount on French Glass is now 75& 10&5 % instead of 80 %, as quoted in our price-list, and that the discount on American Glass is 80&5 %, instead of 80&10 %.

Wholesale Prices.

NEW YORK, July 3, 1889.

Animal and Vegetable Oils.

Linseed, City, raw	per gal	60 @	..
" " boiled		63 @	..
" Western, raw		58 @	59
Lard, City, Extra Winter		58 @	60
" " Prime, present make		54 @	55
" " Extra No. 1		47 @	50
" " No. 1		42 @	44
" Western, prime		53 @	54
Cotton-seed, Crude, prime		38 @	39
" " off grades		33 @	37
" Summer Yellow, prime		48 @	49
" " " off grades		45 @	47
Sperm, Crude		65 @	67
" Natural Spring		68 @	70
" Bleached Spring		73 @	75
" Natural Winter		75 @	77
" Bleached Winter		80 @	82
Whale, Crude		.. @	..
" Natural Winter		.. @	46
" Bleached Winter		.. @	48
" Extra Bleached		49 @	50
Sea Elephant, Bleached Winter		54 @	55
Menhaden, Crude, Sound		22 @	24
" Crude, Southern		22 @	23
" Light Pressed		30 @	32
" Bleached Winter		35 @	36
" Extra Bleached		38 @	39
Tallow, City, prime		.. @	50
" Western, prime		.. @	49
Cocoanut, Ceylon		5⅝ @	5¾
" Cochin		6⅛ @	6⅜
Cod, Domestic		33 @	34
" Foreign		34 @	35
Red Elaine		36 @	38
Red Saponified	℔	4⅞ @	5¼
Bank	per gal	27 @	..
Straits		28 @	
Olive, Italian, bbls		64 @	66
Neatsfoot, prime		62½ @	75
Palm, prime, Lagos	℔	5¼ @	..

Mineral Oils

Black, 29 gravity, 25 @ 30 cold test,	per gal	8 @	9
" " 15 " "		8½ @	9½
" " summer		6 @	7
Cylinder, light, filtered	"	15 @	20
" dark, "	"	14 @	20
" " steam refined	"	10 @	18
Paraffine, 23½ @ 24 gravity	"	11 @	12
" 25 "	"	10 @	11
" 28 "	"	8½ @	9
" red, 21 @ 22 gravity	"	14 @	14½
" " 22½ @ 23 "	"	12 @	13

Paints and Colors.

Barytes, Prime White	℔ ton.	$16 .. @	20 ..
" off-color		12.00 @	14 ..
" Foreign floated		19 .. @	21 ..
Blue, Celestial	℔	5½ @	7½
" Chinese		45 @	50
" Prussian		20 @	35
" Ultramarine		7 @	25
Brown, Spanish		½ @	1
" Vandyke, American		3 @	3½
" " English		6 @	8
Black, American Drop		8 @	10
" English "		12 @	14
" Frankfort "		5 @	18
Black, Lamp, common		12 @	18
" " medium		19 @	25
" " prime		27 @	33
Carmine, No. 40, in bulk		3.10 @	..
" " in boxes or barrels		3.20 @	..
" " in ounce bottles		4.20 @	..
Chalk, in bulk	℔ ton.	2.50 @	2.75
China Clay, English		13.50 @	18
" Southern		10.00 @	11.50
Cobalt Oxide, prep'd		2.90 @	..
" " black lots 100 ℔		2.60 @	..
" " less "		2.65 @	..
Crocus Martus, English	℔ ℔.	1¾ @	2¼
" American		1¾ @	2¼
Green, Paris, in bulk		20 @	..
" " 170 @ 175 ℔ kegs		20½ @	..
" " small packages		22 @	26½
" Chrome, ordinary		8 @	11
" " extra		12 @	13
" " pure		22 @	25

REBATES, &c.—Paris Green.—Rebates to buyers of 500 to 1000 ℔ during season, ½¢ ℔ ℔; to buyers of 1000 to 2000 ℔, 1¢; to buyers of 2000 to 4000 ℔, 1½¢; to buyers of 4000 to 10,000 ℔, 2¢, to buyers of 10,000 ℔ and over 2½¢. Buyers of 5 tons or over at one time receive an additional ½¢ ℔ ℔.

Lead, American White, dry		6¾ @	7
" " in oil		7 @	7¼
" Red		6¾ @	7
Litharge, in barrels		6¾ @	..
" " 500-℔ lots		7 @	..
" " smaller "		7¼ @	..

REBATES, &c.—White Lead. ½¢ ℔ ℔ rebate on purchases of 500 ℔ and over, if paid for within 60 days of date of invoice; terms, 60 days or a discount of 2½ % if payment within 15 days from date of invoice. Extra rebate of ½¢ ℔ ℔, payable July 1 and December 31 to buyers of a total of 10 tons pure Lead during the year.

Litharge.—Rebate of ½¢ ℔ ℔ for cash in 60 days and 2½ % additional for cash in 15 days.

Ocher, Rochelle		1⅜ @	1⅝
" Bermuda Single-Washed		1½ @	1¾
" " Double-Washed		1¾ @	1⅞
" " Floated		1½ @	1¾
Orange Mineral, English		8½ @	9½
" French		9 @	10
" German		8½ @	9½
" American		8 @	8½
Paris White, English Cliffstone		1.00 @	1.10
" American		70 @	85
Red, Indian, English		5½ @	7
" " American		2 @	6
" Turkey		9 @	14
" Tuscan		9 @	11
" Venetian, American	℔ 100 ℔.	90 @	1.25
" " English		1.00 @	1.47½
Sienna, Italian, Burnt and Powd.	℔ ℔	5 @	6¾
" " Burnt Lumps		1¾ @	3½
" " Raw, Powdered		5 @	6¾
" " " Lumps		2 @	3½
" American, Raw		1½ @	1¾
" " Burnt and Powdered		1½ @	1¾
Talc, French		1¼ @	1½
" American		1 @	1¼
Terra Alba, French	per 100 lb	75 @	80
" English		80 @	85
" American No. 1		70 @	75
" American No. 2		38 @	40
Umber, Turkey, Bnt. and Powd.	℔ ℔	3½ @	4
" Burnt, Lumps		2¾ @	3
" Raw and Powdered		3¾ @	4
" Raw, Lumps		2¼ @	2¾
" Burnt, American		1¼ @	1½
" Raw, "		1¼ @	1½
Yellow, Chrome		10 @	25
Vermilion, American, Lead		11½ @	13
" Quicksilver		60 @	65
" English Imported		82 @	85
" Imitation English		8 @	25
" Trieste		75 @	77
" Chinese		88 @	90
Whiting, Common	℔ 100 ℔	42½ @	47½
" Gilders'		55 @	60
Zinc, American, dry	℔ ℔	4¼ @	4¾
" French, Red Seal		6¾ @	....
" " Green Seal		7½ @	....
" " V. M. X		6 @	....
" Antwerp, Red Seal		6½ @	....
" " Green Seal		7 @	....
" V. M. X		6 @	....
" German, L. Z. O		5¾ @	....
" V M. in Poppy Oil, G. Seal, lots of 1 ton and over		9⅝ @	10¼
lots less than 1 ton		9⅞ @	10⅜
Zinc, V. M. in Poppy Oil, Red Seal, lots of 1 ton and over		8½ @	9
Lots of less than 1 ton		8¾ @	9¼

DISCOUNTS.—French Zinc.—Discounts to buyers of 10-bbl. lots of one or assorted grades, 1 %; 25 bbls, 2 %; 50 bbls, 4 %. No discount allowed on less than bbl. lots.

Colors in Oil.

Blue, Chinese	℔ ℔	35 @	40
" Prussian		20 @	45
" Ultramarine		12 @	18
Brown, Vandyke		7 @	12
Green, Chrome		8 @	13
" Paris		16 @	18½
Sienna, Raw		7 @	13
" Burnt		7 @	13
Umber, Raw		7 @	10
" Burnt		7 @	10

Glue.

Low Grade	℔ ℔	8 @	10
Cabinet		12 @	14
Medium White		13 @	15
Extra "		17 @	20
French		9 @	20
English		10 @	15
Irish		12 @	15

Manipulators of trust certificates on the Stock Exchange have succeeded in securing wide circulation of the following item: "It is announced that the American Cotton Oil Trust has entered into an harmonious arrangement with the Southern Cotton Oil Company, its strongest opponent. The company own eight mills and pay 8 per cent. dividend." This statement was doubtless for the purpose of "bulling" American Cotton Trust certificates, on which there has thus far been paid one dividend of 1¼ per cent. It is a somewhat suggestive fact that the price of A. C. T. certificates declined 3 per cent. the day previous to and a further 1 per cent. on the day the above item was circulated.

The trade returns of India for the year ending March 31 contain very suggestive data bearing upon the competition there between Russian and American refined Petroleum. It is shown that during the year 1888–89 no less than 17,516,000 gallons of the Russian Oil were imported, against only 5,036,000 gallons the year previous, whereas the importations of of American Oil dropped from 25,038,000 gallons to 20,646,000 gallons. In other words, Russia furnished 46 per cent. of India's supply in 1888–89, against a fraction over 16 per cent. the year previous.

The Standard Oil Company, it is reported, will soon build a large storage tank at Worcester, Mass., and make that city a distributing point for New England.

The Rosin-Oil department of the Salem and South Danvers Oil Company, Salem, Mass., was completely destroyed by fire.

It is stated that a number of mills controlled by the American Cotton Oil Trust will be extended and the ginning of cotton and the manufacture of fertilizers be added to cotton-oil production. This may account for the non-dividend announcement at the recent A. C. T. meeting.

The Independent Cotton Oil Company, of New Orleans, will, it is said, soon build a mill of 60 tons capacity.

The shipments of Cotton-Seed Meal from Southern ports to Europe are running somewhat heavy. The steamer Kate, for Hamburg, recently took 10,225 sacks from Baltimore and over 37,000 sacks were exported from New Orleans last week, making a total of 547,000 sacks since September 1.

There has been a sale of 550 pounds of Crude Whale Oil in the New Bedford market during the week, but, for reasons probably satisfactory to themselves, neither buyer nor seller will divulge particulars as to price.

At a meeting of directors of the Vicksburg (Miss.) Cotton Oil Company Mr. C. J. Edwards was elected president and Capt. J. B. Bres secretary and treasurer. The affairs of the company are in fine shape, and it is said a substantial dividend has been declared.

Rumor has been busy making it out that a movement is on foot to form a trust of the manufacturers of Oxide of Zinc. The story circulated is to the effect that Standard Oil magnates are back of the project, with a view of controlling Zinc as well as Lead and incidentally nearly the entire paint business.

The manufacturers of Metallic Paints continue to follow "Kilkenny cat" tactics and are crowding prices to a ridiculously low point.

A New Anvil.

The anvil represented in the accompanying illustrations, Figs. 1 and 2, is manufactured by the O'Brien & Carew Anvil Company, 59 Swett street, Boston, Mass. From these it will be seen that the anvil is

Fig. 1.—Improved Anvil.

so constructed that the face, which is liable to wear out, is readily replaced, thus avoiding the expense of purchasing a new anvil, as the defaced or worn part can be taken out and dressed by a blacksmith in a short time or a new die be put in at a comparatively trifling expense. We

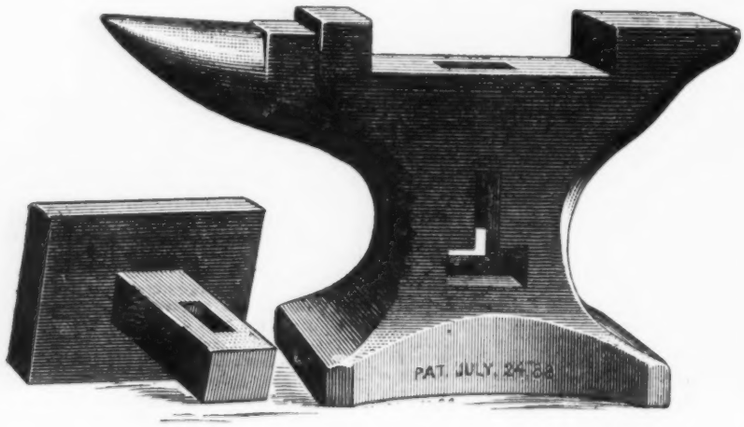
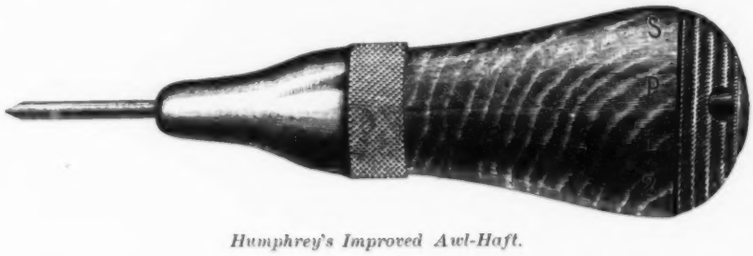


Fig. 2.—Showing Construction of Anvil.

are advised that the dies are solid forgings from the best cast-steel, and the face of the anvil is chilled ½ inch in depth to correspond with the hardness of the steel dies, and that the body of the anvil is two-thirds steel, one-third iron being referred to as necessary in its formation to toughen it. This anvil is put on the market with claims as to its excellence, the quality of its workmanship being especially emphasized. It is thus far made in two sizes, 180 and 250 pounds. It is expected that others will soon be added.

Humphrey's Improved Awl-Haft.

The accompanying illustration represents a new awl-haft which is put on the market by the Humphrey Tool Company, Warren, Mass. This haft is put on the market with the expectation that its special features will commend it to the trade, and in its construction the manufacturers have endeavored to avoid difficulties which have been found with other similar tools. In some handles the awls are liable to pull out of the tool when they are driven into hard wood, but in this case the square part of the awl cannot pass through the round hole at the end of the cap. Neither can the awl turn in the handle, as it rests firmly in a square socket and is held upright and centrally by the cap, which is screwed down until the inside of the cap draws firmly upon the neck of the awl. The tools are safely and conveniently stored each in a separate chamber under the metal ring at the end of handle, where ten different tools—eight awls, one screwdriver and one point—are held in separate cells. The ring covering the chamber in which the tools are kept can be revolved bringing the one hole in it over any of the chambers containing the tool required, and thus permitting it to be readily taken out. The wood near the ring is stamped with figures or letters indicating the size of the different tools. The turning of this ring is so retarded that it is referred to as safe to leave it at the point where the tool is removed until the return of the tool, when the ring can be moved so that the opening comes to a space in the handle where no tool is contained, thus closing all the openings and leaving the tool secure. The handles are made of fancy hard wood polished, the metal parts being full nickel, with knurled surfaces at the points needed to enable the operator to screw them up firmly. The handle is solid wood and it is stated that it may be struck with hammer or mallet without injury.



Humphrey's Improved Awl-Haft.

Walker's Beverage-Mixer.

This article is made by the Erie Specialty Mfg. Company, Erie, Pa. It is represented in the accompanying illustration in position in which it is used in connection with the glass in which the beverage to be mixed is placed. It will thus be seen that it is intended to do the work

Walker's Beverage-Mixer.

of milk-shaking machines, and also to replace the mixing of beverages by shaking by hand, and is referred to as especially adapted for hotels, restaurants, confectioners and domestic uses. The mixer, as indicated by the cut, has attached to the part which rests upon the top of the glass two side pieces which run down into the glass, and between them the blade, which is revolved by means of the geared wheel operated by handle. By this means a rapid rotation is given to the blade, and as there is but little space between it and the side-pieces, a thorough mixing of the beverage is readily obtained. The length of the mixer is 13½ inches and the rotating blade is 1¼ inches wide, the diameter of the cap which rests on the top of the glass being 3¾ inches. The part of the mixer which rests upon the glass is provided with a rubber washer, thus making it tight and preventing the spilling of the beverage. The mixer is finely plated and substantially made and not liable to get out of order. It is furnished regularly with three glasses.

Trick-Dog Toy Savings-Bank.

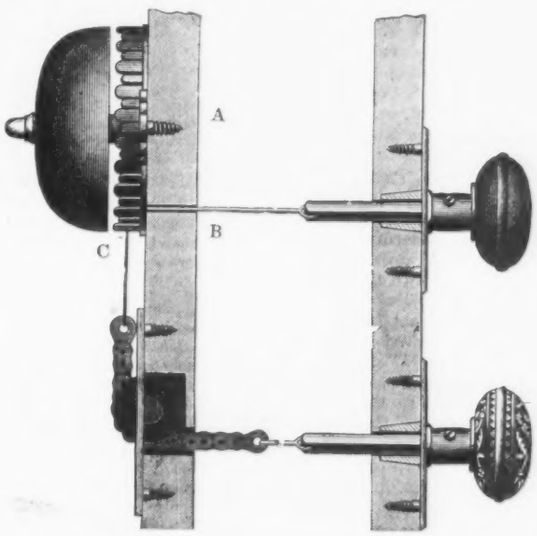
This article is made by the Shepard Hardware Company, Buffalo, N. Y., and is correctly represented, except in color and size, in the accompanying illustration. It is made entirely of iron, highly finished in brilliant colors. In use the coin is placed in the dog's mouth, and when the

Trick-Dog Savings-Bank.

thumb-piece is pressed upon the dog jumps through the hoop held by the clown and deposits the coin in the top of the barrel. A trap-door in the barrel prevents the coin from shaking out and it is deposited in the space below, from which, when desired, it can be taken out by unlocking the compartment, for which purpose a key is furnished. This bank is 7½ inches in hight and 8¾ inches long.

Sargent's Patent Double-Stroke Door-Bells.

The accompanying illustrations represent the different ways in which Sargent's New Patent Double-Stroke Door-Bell, made

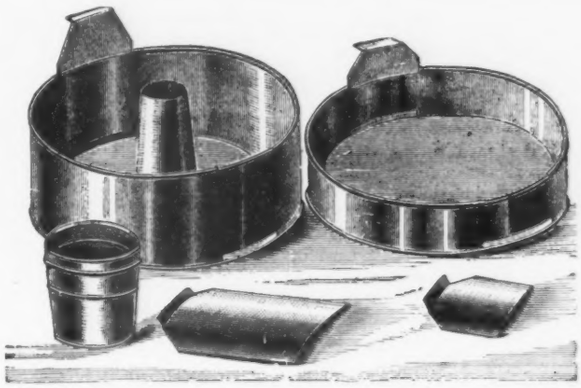


Sargent's New Patent Double-Stroke Door-Bell.

by Sargent & Co., New Haven, Conn., and New York, may be operated, its construction being such that one bell is adapted for many different uses, as a push, pull or lever bell, thus obviating the necessity of keeping several different kinds in stock. The range of its adaptation is indicated in the cuts. Fig. 1 shows the bell with a bell-pull worked by a direct wire, and indicates also that it may be carried by the use of cranks to any place desired. At A the bell can be worked with a push-button, and at B it can be operated also by a lever. At C it can be worked with a slide pull, a mortise crank or a pulley bell-crank. It can also be operated by a wire in a number of different positions, thus giving it a wide range of adaptation. The convenience of this construction, which is shown more fully in the printed matter issued by the manufacturers in regard to it, will be appreciated by the trade.

Van Dusen's Improved Cake-Molds.

The Clifton Springs Mfg. Company, of Clifton Springs, N. Y., are introducing to the trade what is known as Van Dusen's

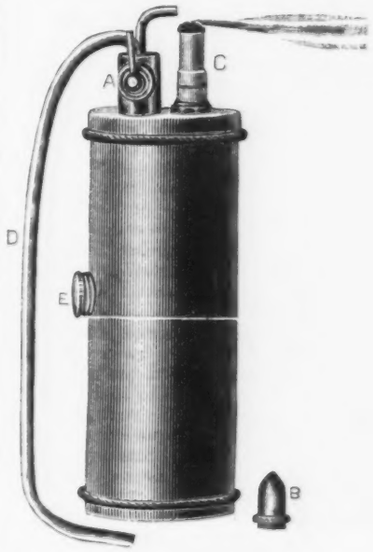


Van Dusen's Improved Cake-Mold and Measuring-Cup.

Patent Improved Cake-Molds and Measuring-Cup, a general view of which is afforded by means of the accompanying illustration. These molds are constructed of tin, and are made both round and square in order to meet all requirements. At two points of the sides of the molds and directly opposite each other are slides made of tin and adapted to close the openings in the base, all as shown in the engraving. The object of these slides is to form a support for the mold when inverted after being taken from the oven to cool, and also as a rest for the cover which it may be desired to place over the cake to screen it from excessive heat when baking. The openings shown in the base of the mold afford a place for inserting a knife to separate the bottom of the cake from the mold, as it is recommended that the mold should not be greased. The manufacturers state that by the use of this form of mold all danger of broken and ill-shaped loaves is avoided, and that it will be found to give satisfaction whenever used. The company are also bringing out a measuring-cup designed for use in measuring the various ingredients in cooking, thus doing away with all necessity for guess-work. The general form of this cup is shown at the left in the engraving.

A New Gasoline Torch.

The J. C. Walsh Gasoline Torch Mfg. Company, of 219 South Clinton street, Chicago, are offering the trade a neat, simple and durable torch, made of the very best brass and highly finished. This torch, a general view of which is shown in the accompanying illustration, is 6 inches high and 2¼ inches in diameter, and is adapted for use by plumbers, gas-fitters, jewelers, silversmiths, makers of models, electricians, and in fact all who are called upon to solder or braze. The makers state that the flame can be easily regulated, making a long bushy flame, a long thin flame, a short flame, or a flame as fine as a needle. The device may be turned bottom side up or in any position while in use without danger. It is especially recommended for making invisible joints on any size of lead pipe or for creating heat for making large joints, joints in difficult places or cup-joints. The cost of using this torch is said to be exceedingly small, not amounting to more than one cent per day. Referring to the engraving, C is the wick-tube, which is unscrewed for the purpose of filling the



New Gasoline Torch.

upper chamber with gasoline or alcohol. In the lower chamber E nothing but gasoline is used. The side-screw is removed and the torch held upright while the gasoline is poured in until it is on a level with the bottom of the side-screw E. A is a valve for controlling and regulating the flame. B is the cap which fits over the wick-tube. D is a flexible tube or blow-pipe. The manufacturers recommend that gasoline of 65 or 70 gravity should be used in this torch. Common soap is employed for greasing the plug A whenever it becomes necessary. It is recommended that the lower chamber E be emptied at least once a week in order to keep all the parts free and clean.

NEW PUBLICATIONS.

ECONOMIC VALUE OF ELECTRIC LIGHT AND POWER. By A. R. Foote. Robert Clarke & Co., Cincinnati, publishers. Price $1.

This book is designed to be of service to those who are interested in obtaining State or municipal legislation, to those who are interested in electric central stations, and to manufacturers, to assist them in opening new fields for the use of their apparatus and extending its use when a beginning has been made. The book describes the present condition of electric light and power and then enters very fully into the discussion of the more important factors of the problem. book deals with a subject of great and growing interest at the present time and one about which there is only fragmentary information. A description of the several steps which have been taken by others is, therefore, of great value to those who are about to travel over the same course. The book is of special interest to those who use electricity and principally to those who contemplate its use, whether in the form of power or light.

STRENGTH OF BEAMS AND COLUMNS. By Robert H. Cousins, C.E. E. & F. N. Spon, New York and London, publishers. Price $5.

This is a theoretical and practical treatise on the strength of beams and columns in which the ultimate and elastic limit strength of beams and columns is computed from the ultimate and elastic limit compressive and tensile strength of the material by means of formulas deduced from the correct and new theory of the transverse strength of materials. "The theory advanced in this book and the formulas resulting therefrom deduce the strength of beams and columns from the direct crushing and tensile strength of the material composing them without the aid of that co-efficient that has no place in nature, the modulus of rupture. The theory and the formulas deduced therefrom are in strict accord with correct mechanical and mathematical principles, and the writer believes that they will fully satisfy the results obtained by the experimenter." This paragraph explains the underlying principles upon which the author has constructed his work. The great practical benefits to be derived from the correct theory of the strength of beams and columns will be appreciated when we consider the countless tons of metal that have been made into railroad rails, beams and other various forms.

MECHANICS OF ENGINEERING. By Irving P. Church, C.E., Assistant Professor of Civil Engineering, Cornell University. John Wiley & Sons, New York, publishers. Price $3.

This treatise on hydraulics and pneumatics is intended particularly for use in schools, and the same general design has been kept in view in the preparation of the work as that which was followed in the same writer's work on "Solids," namely, to combine clearness and consistency in the setting forth an illustration of theoretical principles; to provide numerous and fully-lettered diagrams, in which in most cases the notation of the accompanying text can be apprehended at a glance, and to invite close attention to the proper use of systems of units in numerical examples, the latter being introduced very copiously and with detailed explanations. The first chapter of the book gives details, with definitions, on fluid pressure, and begins hydrostatics, which is continued in the second chapter under the heading of pressure of liquids in tanks and reservoirs. The succeeding chapters give immersion and flotation and gaseous fluids. We then come to hydrodynamics and the steady flow of liquids through pipes and orifices and the steady flow of water in open channels, then the dynamics of gaseous fluids and finally to the impulse and resistance of fluids. The author has treated the subject chosen in a concise, simple and comprehensive style, and has presented a work which as a textbook and as a book of reference will justly rank high. To the mechanical engineer that portion of the work which treats of the mode of working steam-air and hot-air pressure will be of particular interest, since the text is interspersed with many numerical examples and with clear illustrations.

HANDY LISTS OF TECHNICAL LITERATURE.

The National Publishing and Printing Company, Milwaukee, Wis., send us the first part of a publication entitled "Handy Lists of Technical Literature." The scheme of these publications is an excellent one, and so far as a hasty examination shows the work has been carried out with great fidelity and care. The object, as the name implies, is to present a catalogue of technical literature so indexed that the publisher, price and particulars of every recent book in this general department can be found out. It is pointed out in the preface that technical literature is particularly hard to obtain precise information about, and all who have had occasion to look up particular subjects or particular books of a technical nature will bear witness to the truth of this assertion. With the volumes in this publication book-sellers and librarians may obtain keys which give in full the names and addresses of the publishers that are printed in contracted form in the list itself. The work will be divided into seven parts, Part 1, which is now ready for distribution, referring to the useful arts in general, products and processes used in manufacture, technology and trades, arranged according to authors in alphabetical order, with the subject index in the same alphabetical arrangement; containing also analytical references to parts or volumes of important works, like cyclopedias, reference books, &c. Part 2 will be devoted particularly to military and naval science, Part 3 to mechanics and engineering, Part 4 to mining and geology, Part 5 to the fine arts, Part 6 to agriculture, building, carpentry, &c., and Part 7 will be reference works on miscellaneous subjects.

Preventing Accidents in Germany.—It may well be doubted, says a German paper, whether any previous age has been characterized by such a friendly spirit toward the working classes as distinguishes our own day. The Accidents Preventatives Exhibition, which is now open in Berlin, is one of the many proofs of the interest taken by the other classes of the community in our laboring population. That the Berlin exhibition is in close relation with our social legislation is shown by the committee of the exhibition, who observe in their explanation of the aim of the exhibition as follows: "While the insurance law is intended to protect the workmen against want during temporary illness, the accidents laws have placed upon the employer the obligation to secure his workmen against the lasting consequences of accidents which they may meet in their several pursuits, industrial and agricultural." The principle is there laid down, and it has come to be generally recognized, that the employer is responsible for the danger of accidents connected with his business. Naturally certain rights were granted to him in regard to the prevention of accidents, which might contribute to the diminution of this danger. The compulsory national insurance does not preclude the masters from helping themselves, as it leaves to the proper judgment of the masters, combined in societies, the extent to which they may avail themselves of the powers intrusted to them. To these powers belong, in the first place, the establishment of regulations for the existing arrangements with that object. To offer such, as well as to give an impulse to the completion or improvement of existing arrangements, is the object of the German Accidents Preventatives Exhibition.

CONTENTS.

Effects of the German Beam Combination.... 1
Wire-Rolling Machine. Illustrated.... 1
The Princeton Scientific Graduates.... 2
Bolt-Cutter, Nut-Tapper and Pipe-Threader. Ills. 3
Railway Wheels and Rails.... 3
Failure of S. Robbins & Son.... 4
The Hot-Blast System of Warming Buildings. Ills. 5
The Cotton-seed Oil Trust Case.... 5
Steam-Engine Working-Beam. Illustrated.... 6
Wide Distribution of Southern Iron.... 7
Mineral Production of New Jersey.... 7
The Life of Steel Rails.... 7
Bethlehem Ahead of Time.... 7
The American Engineers in London.... 8
Steel Pipe.... 10
Wall Radial Drill. Illustrated.... 10
The Week.... 11

Manufacturing:
Iron and Steel.... 12
Hardware.... 13
Miscellaneous.... 13

Editorials:
The Business Situation.... 14
Cheapness of American Railroad Service.... 14
Failure of the St. Lawrence Route.... 15
Argentine Progress.... 15
The U. S. Steel Twin-Screw Gun-Boats. Illus.... 16
Metallic Railroad Ties.... 17
How the Hotchkiss Guns are Put Together.... 17

Trade Report:
Chicago.... 18
Philadelphia.... 18
Cleveland.... 19
Cincinnati.... 19
Pittsburgh.... 20
Louisville.... 20
Detroit.... 20
St. Louis.... 20
Birmingham.... 21
New York.... 21
Financial.... 21
Metal Market.... 22
New York Metal Exchange.... 22
Coal Market.... 22
Imports.... 23
British Iron and Metal Markets.... 23
Foreign Markets.... 23
Subsidies to Canadian Steamship Lines.... 24
Hardware.... 25–28
Review of the Wholesale Market in Paints and Oils.. 28
A New Anvil. Illustrated.... 30
Humphrey's Improved Awl-Haft. Illustrated.... 30
Walker's Beverage-Mixer. Illustrated.... 30
Trick-Dog Toy Savings-Bank. Illustrated.... 31
Sargent's Patent Double-Stroke Door-Bells. Illus. 31
Van Dusen's Improved Cake-Molds. Illustrated.. 31
A New Gasoline Torch. Illustrated.... 31

New Publications:
Economic Value of Electric Light and Power.. 32
Strength of Beams and Columns.... 32
Mechanics of Engineering.... 32
Handy List of Technical Literature.... 32
Preventing Accidents in Germany.... 32
Current Hardware Prices.... 33
Current Metal Prices.... 38
Classified List of Advertisers.... 105
Alphabetical Index to Advertisers.... 108

CURRENT HARDWARE PRICES.

JULY 3, 1889.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

Ammunition.—

Caps, Percussion, ℔ 1000—

Hicks & Goldmark's
F. L. Waterproof, 1-10's.....50¢
E. B. Trimmed Edge, 1-10's...65¢ } 25 @
E. B. Grnd. Edge, Cent. Fire, 1-10's.70¢ } 25 & 7½ %
Double Waterproof, 1-10's..$1.40
Musket Waterproof, 1-10's.....50¢
G. D.....28¢
S. B.....30¢

Union Metallic Cartridge Co.
F. C. Trimmed.....50¢
F. L. Ground.....65¢ } 25 @
Cent. Fire Ground.....70¢ } 25 &
Dbl. Waterproof.....$1.40 } 7½ %
Dbl. Waterproof, in 1.10's..$1.40
S. B. Genuine Imp..orted.....45¢
Eley's E. B.....54¢ @ 55¢
Eley's D Waterproof, Central Fire...$1.00

Cartridges.
Rim Fire Cartridges.....50&5&2 %
Rim Fire Military.....15&2 %
Cent. Fire, Pistol and Rifle.....25&5&2 %
Cent. Fire, Military and Sporting 15&5&2 %
Blank Cartridges, except 22 and 32 cal., additional 10 % on above discounts.
Blank Cartridges, 22 cal., $1.75.....2 %
Blank Cartridges, 32 cal., $3.50.....2 %
Primed Shells and Bullets.....15&5&2 %
B. B. Caps, Round Ball, $1.75.....2 %
B. B. Caps, Con. Ball, Swgd., $2.00.....2%

Primers—
Berdan Primers, $1.00.....2%
B. L. Caps (for Sturtevant Shells) $1.00, 2%
All other Primers, $1.20.....2%

Shells—
First quality, 4, 8, 10 and 12 gauge 25&10&2%
First quality, 14, 16 and 20 gauge ($10 list).....30&10&2%
Star, Club, Rival and Climax brands, 20&10&2%
Selbold's Comb. Shot Shells.....15&2%
Brass Shot Shells, 1st quality.....60&2%
Brass Shot Shells, Club, Rival, Climax.. 65&2%
I X L, 10 and 12 guage.....40&5&2%
"Special," 16 gauge.....30&10&5&2%
"Special," 10 and 12 gauge.....40&10&2%
Fowler's Pat.....$3.25

Shells Loaded—
A. M. Co. List No. 19, 1887....40@40&10%

Wads—
U. M. C. & W. R. A.—B. E., 11 up..$2.00 } 20&2%
U. M. C. & W. R. A.—B. E., 9&10.. 2.30 } 20&2%
U. M. C. & W. R. A.—B. E., 7&8... 2.60 } 20&2%
U. M. C. & W. R. A.—P. E., 11 up.. 3.10 } 20&2%
U. M. C. & W. R. A.—P. E., 9&10.. 4.00 } 20&2%
U. M. C. & W. R. A.—P. E., 7&8... 4.90 } 20&2%
Eley's B. E., 11 up.....$1.75
Eley's P. E., 11@20.....2.80

Anvils.—

Eagle Anvils, ℔ 10¢.....20@20&5%
Peter Wright's.....9½¢
Armitage's Mouse Hole.....8½¢
Armitage's Mouse Hole, Extra.11½@11½¢
Trenton.....9½@9½¢
Wilkinson's.....9½@10¢
J. & Riley Carr, Pat. Solid.....11@11½¢
Moore & Barnes Mfg. Co.....33⅓%

Anvil Vise and Drill—
Millers Falls Co., $18.00.....20%
Cheney Anvil and Vise.....25%
Allen Anvil and Vise, $3.00.....40&10%

Apple Parers—

Advance.....℔ doz $4.75
Antrim Combination.....℔ doz 5.50
Baldwin.....℔ doz 5.25
Champion.....℔ doz 7.25
Daisy.....℔ doz 3.75
Eureka, 1888.....each 17.00
Family Bay State.....℔ doz 12.00
Favorite.....℔ doz 5.00
Gem.....℔ doz 5.25
Gold Medal.....℔ doz 4.00
Ideal.....℔ doz 4.00
Improved Bay State.....℔ doz 30.00
Little Star.....℔ doz 4.00
Monarch.....℔ doz 13.50
New Lightning.....℔ doz 5.50
Oriole.....℔ doz 4.00
Penn.....℔ doz 4.00
Perfection.....℔ doz 4.00
Pomona.....℔ doz 4.00
Rocking Table.....℔ doz 5 25
Turntable.....℔ doz 4.50
Victor.....℔ doz 13.50
Waverly.....℔ doz 4.00
White Mountain.....℔ doz 4.50
72.....℔ doz 4.25
76.....℔ doz 5.75
78.....℔ doz. 6.50

Augers and Bits—

Douglass Mfg. Co. } 70%
Wm. A. Ives & Co. } 70%
Humphreysville Mfg. Co. } 70%
French, Swift & Co. (F. H. Beecher, Rockford Bit Company } 70%
Cook's, Douglass Mfg. Co.....55 %
Cook's, N. H. Copper Co.50&10&50&10&5%
Ives' Circular Lip.....60%
Patent Solid Head.....30%
C. E. Jenning & Co., No. 10, extension lip.....40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ℔ set, 32½ quarters, No. 5, $5; No. 30, $3.50.20%
Lewis' Patent Single Twist.....45%
Jennings' Augers and Bits.....25%
Imitation Jennings' Bits.....60&60&5%
Pugh's Black.....20%
Rockford, Jenning's Pattern.....60%
Car Bits.....50&10&60%
L Hommodieu Car Bits.....15&10%
Forstner Pat. Auge Bits.....10%

Hollow Augers—
Ives' } 33⅓ @
French, Swift & Co. } 33⅓&10%
Douglass' } 33⅓&10%
Bonney's Adjustable, ℔ doz $48....40&10%
Stearns'.....20&10%
Ives' Expansive, each $4.50.....50&5%
Universal Expansive, each $4.50.....20%
Wood's.....25&25&10%

Expansive Bits—
Clarks' small, $18; large, $26...35@35&5%
Ives' No. 4, ℔ doz $60.....40%
Swan's.....40%
Steer's, No. 1, $26; No. 2, $22.....35%
Stearns' No. 2, $48.....20%

Gimlet Bits—
Common .....℔ gross $2.75@$3.25
Diamond.....℔ doz $1.10.....25&10%
Bee.....25@25&5%
Double Cut, Shepardson's....45@45&10%
Double Cut, Ct. Valley Mfg. Co....30&10%
Double Cut, Hartwell's, ℔ gro.....$5.25
Double Cut, Douglass'.....40&10%
Double Cut, Ives'.....60@60&10%

Bit Stock Drills—
Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30@30&5%
Williams' or Holt's, for metal.50&10&10%
Williams' or Holt's, for wood..40&10%

Ship Augers and Bits—
L'Hommedieu's.....15&10@15&10&5%
Watrous'.....15&10@15&10&10%
Snell's.....15&10@15&10&5%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10@5%

Awl Hafts—

Sewing, Brass Fer. ℔ gr, $3.50.....45&10%
Pat. Sewing, Short.$1.00 ℔ doz,....40&10%
Pat. Sewing, Long.....℔ doz $1.20
Pat. Peg, Plain Top. ℔ gr $10.00..45&10%
Pat. Peg, Leather Top. ℔ gr $12.00.45&10%

Awls, Brad Sets, &c—

Awls, Sewing, Common ℔ gr $1.70, 35%
Awls, Shoul. Peg. ℔ gr $2.45, 40@40&10%
Awls, Pat. Peg....℔ gr $3.¢....40&40&10%
Awls, Shouldered Brad..2.70 ℔ gr.....35%
Awls, Handled Brad...$7.50 ℔ gr.....45%
Awls, Handled Scratch ℔ gr, $7.50..35&10%
Awls, Socket Scratch. ℔ doz, $1.50.25@30%

Awl and Tool Sets—

Aiken's Sets, Awls and Tools, No. 20, ℔ doz $10.00.....55&10%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9.....25@25&10%
Miller's Falls Adj. Tool Hdls.. Nos. 1, $12. 2, $18.....25%
Henry's Combination Haft...℔ doz $6.50
Brad Sets, No. 42, $10.50; No. 43, $12.50..70&10&5%
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50.....30&10%

Axes—

Makers' and Special Brands—
First quality .....℔ doz $6.00@$6.50
Others.....℔ doz $5.50@$5.75

Axle Grease—

Fraser's .....Keg ℔ ℔ 4¢, Pail ℔ ℔ 5¢
Fraser's, in boxes.....℔ gr $9.50
Dixon's Everlasting, in bxs...℔ doz 1 ℔ $1.20; 2 ℔ $2.00
Dixon's Everlasting....10-℔ pails, ea. 85¢
Lower grades, special brands, ℔ gr $5.50@$7.00

Axles—

No. 1.....4¢@4½¢, No. 2 5½¢@5½¢
Nos. 7 14.....55&5%
Nos. 15 to 18.....47½%
Nos. 19 to 22.....70%
National Tubular Self-Oiling: Standard Farm (1 to 5) and Special Farm (A1 to A5):
Less than 10 sets.....33⅓%
Over 10 sets.....33⅓&5%

Bag Holders.—

Sprengle's Pat.....℔ doz $18.....60%

Balances—

Spring Balances.....50%
Common 24-℔.....℔ doz $1.50.....50%
Chatillon's Spring Balances.....50%
Chatillon's Circular Spring Balances.60%

Bells—

Hand—
Light Brass.....70&10 @ 75%
Extra Heavy.....60&10%
White Metal.....60&10&10%
Silver Chime.....33⅓&10%
Globe (Cone's Patent).....25&10@35%

Door—
Gong, Abbe's.....33⅓&10%
Gong, Yankee.....45&10%
Gong, Barton's.....40&10&50%
Crank, Taylor's.....25&10%
Crank Brooks'.....50&10&2%
Crank, Cone's.....10%
Crank, Connel's.....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned.....25&10%
Lever, R. E. M. Co.'s.....50&10&2%
Pull, Brook's.....50&10&2%
Pull, Western.....25&10%

Cow—
Common Wrought.....60&10%
Western.....20&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Dodge, Genuine Kentucky....70&70&10%
Texas Star.....50&10@50&10&5%
Call.....40@40&5%
Farm Bells.....℔ ℔ 3¢@3½¢
Steel Alloy Church and School Bells..40%

Bellows—

Blacksmiths'.....60@60&5%
Molders'.....40@40&10%
Hand Bellows.....40&10@50%

Belting, Rubber—

Common Standard.....70&10%
Standard.....70&70&5%
Extra.....60&5@60&10%
N. Y. B. & P. Co., Carbon.....60&10&5%
N. Y. B. & P. Co., Diamond.....50&10%

Bench Stops—

Morrill's.....℔ doz ℔9, 50%
Hotchkiss's.....℔ doz ℔5, 10@10&10%
Weston's, No. 1, ℔10; No. 2, ℔9.25&10&5%
McGill's.....℔ doz ℔3.....10%

Bits—

Auger, Gimlet, Bit Stock, Drills, &c., see Augers and Bits.

Bit Holders—

Extension,
Barber's, ℔ doz $15.00.....40@40&10%
Ives, ℔ doz $20.00.....60&5@60&10%
Diagonal.....℔ doz $24.00, 40%
Angular.....℔ doz $24.00, 40&5%

Blind Adjusters—

Domestic.....℔ doz $3.00, 33⅓&%
Excelsior.....℔ doz $10.00....50&10&2%
Washburn's Self-Locking.....20&20&10%

Blind Fasteners—

Mackrell's, ℔ doz, $1.00.....20@20&10%
Van Sand's Screw Pat., $15 ℔ gr..60&10%
Van Sand's Old Pat., $15.00 ℔ gr..55&10%
Washburn's Old Pattern, ℔ gr.....$9.00
Merriman's.....new list
Austin & Eddy No. 2008, ℔ gr.....$9.00
Security Gravity, ℔ gr.....$9.00

Blind Staples—

Barbed, ½ in. and larger.....℔ ℔ 7½¢@8¢
Barbed, ⅝ in.....℔ ℔ 8½¢@9¢

Blocks—

Ordinary Tackle, list May 20, 1889, 40&10&50%
Cleveland Block Co., Mal. Iron....50%
Moore's Novelty, Mal. Iron.....50%

Bolts—

Door and Shutter—
Cast Iron Barrel, Square, &c..70@70&10%
Cast Iron Shutter Bolts.....70@70&10%
Cast Iron Chain (Sargent's list)....65&10%
Ives' Patent Door Bolts.....60%
Wrought Barrel.....70@70&10%
Wrought Square.....70@70&10%
Wr't Shutter, all Iron, Stanley's..60&10%
Wr't Shutter, Brass Knob, " ..40&10%
Wr't Shutter, Sargent's list.....60&10%
Wr't Sunk Flush, Sargent's list....55&10%
Wr't Sunk Flush, Stanley's list....50&10%
Wr't B.K.Flush, Com'n " ....55&10%

Carriage, Machine, &c.—
Com. list June 10, '84.....75&10&2%
Genuine Eagle, list Oct., '84.....75&10%
Phila. pattern, list Oct. 7, '84, 75&10 @ 75&10&5%
R.B.&W., old list.....70%
Machine, according to size....75&10@80%
Bolt Ends, according to size..75&10@80%

Tire—
Common, list Feb. 28, '83.....70%
Port Chester Bolt and Nut Company:
Empire, list Feb 28, '83.....70%
Phila., list Oct. '84.....82½%
Keystone, Philadel., list Oct. '84....80%
Norway, Phila., list Oct. '84 ...75&10%
American Screw Company:
Norway, Phil., list Oct. 16, '84....75&10%
Eagle, Phil., list Oct. 16, '84.....80%
Philadel., list Oct. 16, '84.....82½%
Bay State, list Feb. 28, '83.....70%
R.B.&W., Philadel., list Oct. 16, '84...82½%

Stove and Plow—
Stove.....65%
Plow.....60&5%
R. B. & W., Plow.....55%

Borax.....℔ ℔ 9½@10½¢

Boring Machines—

	Without Augers.	Upright.	Angular.	
Douglas		$5.50	$6.75	50%
Snell's, Rice's Pat.	5.50	6.75	40&10&10	
Jennings	5.50	6.75	45@45&10	
Other Machines	2.35	2.75		net
Phillips' Patent with Augers	00	7.50		

Bow Pins—

Humason, Beckley & Co.'s.....60&10%
Sargent & Co's....$17 and $18.....60&10%
Peck, Stow & W. Co. 50&10&50&10&5%

Braces.—

Barber's,
Nos. 10 to 16.....50%
Nos. 30 to 33.....50%
Nos. 40 to 63.....50&10%
Barker's,
Nos. 8, 10 and 12.....75&10@80%
Plated, Nos. 8, 10 and 12....65&10@70%
Osgood's Ratchet.....40&10&50%
Spofford's.....50&5&50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barbers.....60&5%
Spofford.....60&5@60&10%
Common Ball, American.....$1.00@$1.10
Bartholomew's,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Amidon's
Barker's Imp'd Plain.....75&10 @80%
Barker's Imp. Nickeled....65&10@70%
Ratchet.....75&10@80%
Eclipse Rachet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10; 10 in.....$2.25
Buffalo Ball.....$1.10@$1.15
P. S. & W.....50&10%

Brackets—

Shelf plain, Sargent's list, 55&10@55&10&10%
Shelf, fancy, Sargent's list, 60&10@60&10&10%
Reading, plain.....50&10@60&10&5%
Reading, Rosette.....60&10@60&10&10%

Bright Wire Goods.....87½

Broilers—

Henis' Self- } Inch..... 9 10 9x11
Basting. } Per doz...$4.50 5.50 6.50

Buckets—See Well Buckets and Pails.

Bull Rings—

Union Co. Nut.....55%
Sargent's.....66⅔&10@70&5%
Hotchkiss' low list.....30%
Humason, Beckley & Co.'s.....70%
Peck, Stow & W. Co's..50&10&50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50&50&10%

Butcher's Cleavers—

Bradley's.....25@30%
L. & I. J. White.....20&5%
Beatty's.....40@40&5%
New Haven Edge Tool Co.'s.....40%
P. S. & W.....33⅓&5&33⅓&10%
Foster Bros.....30%
Schulte, Lohoff & Co.....40@40&5%

Butts—

Brass—
Wrought Brass.....75@75&10%
Cast Brass, Tlebout's'.....33⅓%
Cast Brass, Corbin's, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%

Cast Iron—
Fast Joint, Narrow.....50&10&5@60&5%
Fast Joint, Broad.....55&10&5@60&10%
Loose Joint, Loose Joint, Japanned, Loose Joint, Jap. with Acorns, Parliament Butts, Mayer's Hinges } ..70&10 @75%
Loose Pin, Acorns, Loose Pin, Acorns, Japanned, Loose Pin, Acorns, Japanned, Plated Tips } ..70&10 @75%

Wrought Steel—
Fast Joint, Narrow, Fast Joint, Lt. Narrow, Fast Joint, Broad, Loose Joint, Broad, Table Butts, Back Flaps, &c, Inside Blind, Regular, Inside Blind, Light, Loose Pin } ..70&10 @75%
Bronzed Wrought Butts.....60%

Calipers—

See Compasses.

Calks, Toe—

Gautier.....℔ ℔ 5½@6¢
Dewicks (Burke).....℔ ℔ 5½@6¢

Can Openers—

Messenger's Comet.....℔ doz $3.00, 25%
American.....℔ gross $3.00
Duplex.....doz 25¢, 15@20%
Lyman's.....℔ doz $3.75, 20%
No. 4 French.....℔ doz $2.25, 55&60%
No. 5, Iron Handle.....℔ gr $6.00, 45&50%
Eureka.....℔ doz $2.50, 10%
Sardine Scissors.....℔ doz $2.75&3.00
Star.....℔ doz $2.75
Sprague, No. 1, $2.00; 2, $2.25; 3, $2.50 50&10&10%
World's Best, ℔ gross, No. 1, $12.00 No. 2, $24.00; No. 3, $36.00.....50&10%
Universal, ℔ doz $3.00.....35&5%
Domestic, ℔ doz $2.50.....45%
Champion ℔ doz $2.00.....50%

Cards—
Horse & Curry.....10&10@10&10&10%
Cotton.....10@10&10%
Wool.....10@10&10%

Carpet Stretchers—
Cast Steel, Polished.....₱ doz $2.25
Cast Iron, Steel Points.....₱ doz 80¢
Socket.....₱ doz $1.75
Bullard's.....25@25&10%

Carpet Sweepers—
Bissell No. 5.....₱ doz $17.00
Bissell No. 7 New Drop Pan.₱ doz $19.00
Bissell, Grand.....₱ doz $36.00
Grand Rapids.....₱ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20,00
Magic.....₱ doz $15.00
Jewel.....₱ doz $17.00
Improved Parlor Queen, Nickeled.....₱ doz $27.00
Japanned.....₱ doz $24.00
Excelsior.....₱ doz $22.00
Garland.....₱ doz $18.00
arlor Queen.....₱ doz $24.00
Housewife's Delight.....₱ doz $15.00
Queen.....₱ doz $16.00
Queen, with band.....₱ doz $18.00
King.....₱ doz $30.00
Weed, Improved.....₱ doz $18.00
Hub.....₱ doz $16.00
Cog-Wheel.....₱ doz $16.00
Conqueror.....₱ doz $22.00
Easy.....₱ doz $22.00
Monarch.....₱ doz $22.00
Goshen.....₱ doz $21.00
Advance.....₱ doz $18.00
Ladies' Friend, No. 1, ₱ doz, $15.00; No. 2.....₱ doz $16.00
American.....₱ doz $15.00
Grand Republic.....₱ doz $35.00

Cartridges—
See Ammunition.

Casters—
Bed.....
Plate.....
Shallow Socket.....
Brass....55@55&10%
Others...60@60&10%
Deep Socket.....40&10%
Yale Casters, list May, 1884...30&10&40%
Yale, Gem.....60@60&5%
Martin's Patent (Phœnix).....45&10@50%
Payson's Anti-friction.....60@60&10%
Giant Truck Casters.....30%
Stationary Truck Casters.....50&10%
Socket Truck Casters.....50%

Cattle Leaders—
Humason, Beckley & Co.'s.....70%
Sargent's.....66⅔&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....50&10%

Chain—
Trace, 6⅛-10-2, exact, ₱ pair, $1.03.....50&10@50&10&5% race, 6⅛-10-3, exact, ₱ pair 92¢.....50&10@50&10&5%
Trace, 7-10-2, exact, ₱ pair $1.11.....50&10@50&10&5%
NOTE.—Traces, "Regular" sizes, 3¢ net ₱ pair less than exact.
Log, Fifth Stretcher, and other fancy Chains, List Nov. 1, 1884 50&10@50&10&5%
American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$8.75	6.25	5.00	4.50	4.40	4.00	3.75	3.50

Less than cask lots, add ½¢@¼¢ ₱ ℔.
German Coil, list of June 20, 1887 50&10&5@60%
German Halter Chain, list of June 20, 1887.....50&10&5@60%
Covert Halter, Hitching and Breast 50&2%
Covert Traces.....35@2%
Oneida Halter Chain.....60@60&5%
Galvanized Pump Chain.....₱ ℔ 5½@6¢
Jack Chain, Iron.....75@75&5%
Jack Chain, Brass.....70@70&5%

Chalk—
White.....₱ gr 50¢
Red.....₱ gr 70¢
Blue.....₱ gr 85¢
See also Crayons.

Chalk Lines—
See Lines.

Chisels—
Socket Framing and Firmer.
P. S. & W.....
New Haven.....
Witherby.....
Mix.....
Ohio Tool Co.....
75&10 @ 75& 10&5%
Douglass.....75@75&5%
Buck Bros.....30%
Merrill.....60&10@60&10&5%
L. & I. J. White.....30@30&5%
Tanged and Miscellaneous.
Tanged Firmers.....40&10@50%
Butchers'.....$4.75@$5.00
Spear & Jackson's.....$5 to £
Buck Bros.....30%
Cold Chisels, ₱ ℔.....16@19¢

Chucks—
Beach Pat.....each, $8.00.....20%
Morse's Adjustable,each, $7.00, 20@20&5%
Danbury.....each, $6.00, 30@30&5%
Syracuse, Balz Pat.....25%
Skinner's Pat. Drill Chucks.....30%
Skinner's Independent Lathe Chucks.40%
Skinner's Pat. Comb. Chuck.....40%

Clamps—
R. I. Tool Co.'s Wrought Iron.....25%
Adjustable, Gray's.....20%
Adjustable, Lambert's.....20%
Adjustable, Snow's.....40&5%
Adjustable, Hammers.....15%
Adjustable, Stearn's.....20&10%
Stearn's Adjustable Cabinet and Corner.....20&10%
Cabinet, Sargent's.....66⅔&10%
Carriage Makers', Sargent's.....70&10%
Eberhard Mfg. Co.....40&5@40&10%
Warner's.....40&10@40&10&5%
Saw Clamps, see Vises

Clips—
Norway, Axle, ½ & 5-16.....55&5&5%
2nd grade Norway Axle, ¼ & 5-16..65&5%
Superior Axle Clips.....66⅔&5&70%
Norway Spring Bar Clips, 5-16..60&5&5%
Wrought-Iron Felloe Clips.....₱ ℔, 5½¢
Steel Felloe Clips.....₱ ℔, 5¢
Baker Axle Clips.....25%
Cockeyes.....50%

Cocks, Brass.
Hardware list.....40. &10&2%

Coffee Mills—
Box and Side, List Jan. 1, 1888.....60&2%
American, Enterprise Mfg Co.20&10@30%
The Swift, Lane Bros.....20&10%

Compasses Dividers, &c—
Compasses, Calipers, Dividers.70@70&10%
Bemis & Call Co.'s
Dividers.....60&5%
Compasses & Calipers.....50&5%
Wing and Inside or Outside.....50&5%
Double.....60%
(Call's Pat. Inside).....30%
Excelsior.....50%
J. Stevens & Co.'s.....25&10%
Starrett's
Spring Calipers and Dividers 25&10&10%
Lock Calipers and Dividers.....25&10%
Combination Dividers.....25&10%

Coopers' Tools—
Bradley's.....20%
Barton's.....20@20&5%
L. & I. J. White.....20&5%
Albertson Mfg. Co.....25%
Beatty's.....30%
Sandusky Tool Co.....30@30&5%

Corkscrews—
Humason & Beckley Mfg. Co..40@40&10%
Clough's Pat.....33⅓@33⅓&5%
Howe Bros & Hulbert.....35%

Corn Knives and Cutters—
Bradley's.....10%
Wadsworth's.....25%

Cradles—
Grain.....50&2%

Crayons.
White Crayons, ₱ gr 12¢@12½¢.....10%
D. M. Stewart Mfg. Co., Metal Workers, ₱ gr, $2.50.....25%
D. M. Stewart Mfg. Co., Rolling Mill, ₱ gr, $2.50.....25%
See also Chalk.

Crow Bars—
Cast Steel.....₱ ℔ 4¢
Iron, Steel Points.....₱ ℔ 3½¢

Curry Combs—
Fitch's.....50&10@50&10&10%
Rubber per doz $10.00.....20%
Perfect.....50%

Curtain Pins—
Silvered Glass.....net
White Enamel.....net

Cutlery—
Beaver Falls & Booth's.....33⅓
Wostenholme.....$7.75 to £

Dampers, &c—
Dampers, Buffalo.....40&10%
Buffalo Damper Clips.....40&10%
Crown Damper.....40%
Excelsior.....40&10%

Dividers—
See Compasses.

Dog Collars—
Embossed, Gilt, Pope & Steven's list 30&10%
Leather, Pope & Steven's list.....40%
Brass, Pope & Steven's list.....40%

Door Springs—
Torrey's Rod, regular size....₱ doz $1.30
Gray's, ₱ gr., $20.00.....20%
Bee Rod ₱ gr., $20.00.....20%
Warner's No. 1, ₱ doz, $2.50; No. 2, $3.30.....40@10&50%
Gem (Coil), list April 19, 1886.....10%
Star (Coil), list April 19, 1886.....20%
Victor (Coil).....60@60&10%
Champion (Coil).....60&10@60&10&10%
Philadelphia, 5 in., $5.00; 8 in., $7.75..
Cowell's....No. 1, ₱ doz, $18.00; No. 2, $15.00.....50%
Rubber, complete, ₱ doz, $4.50....55&10%
Hercules.....50%
Shaw Door Check and Spring.35@30@35%

Drawing Knives—
Witherby.....
P. S. & W.....
Mix.....
New Haven.....
Merrill.....
75&10 @ 75&10 &5%
Douglas.....75@75&5%
Watrous.....15&10@25%
L. & I. J. White.....20&5%
Bradley's.....35%
Adjustable Handle.....25@33⅓%
Wilkinson's Folding.....25@25&5%

Drills and Drill Stocks—
Blacksmiths'.....each $1.75
Blacksmiths' Self-Feeding, each $7.50.20%
Breast, P. S. & W.....40&10%
Breast, Wilson's.....30&5%
Breast, Millers Falls.....each $3.00, 25%
Breast, Bartholomew's.....each $2.50, 25&10@40%
Ratchet, Merrill's.....20@20&5%
Ratchet, Ingersoll's.....25%
Ratchet, Parker's.....20@20&5%
Ratchet, Whitney's.....20&10%
Ratchet, Weston's.....20@25%
Ratchet, Moore's Triple Action...25@30%
Whitney's Hand Drill, Plain, $11.00; Adjustable, $12.00.....20&10%
Wilson's Drill Stocks.....10%
Automatic Boring Tools...$1.75@$1.85

Twist Drills—
Morse.....50&10&5%
Standard.....50&10&5%
Syracuse.....50&10%
Cleveland.....50&10&5%
Williams.....50&10&10%
New Process.....50&10&5%

Drill Bits.—See Augers and Bits

Drill Chucks.—See Chucks.

Dripping Pans—
Smallsizes,.....₱ ℔ 6¾¢
Large sizes.....₱ ℔ 6¼¢

Egg Beaters.
Dover.....₱ doz $1.50
National, ₱ doz $4.50.....33⅓&5
Family (T. & S. Mfg. Co.), ₱ gro $17.00@$18.00
Duplex (Standard Co.).....₱ gro $15.00
Rival (Standard Co.).....₱ gro $12.00
Large Duplex (Standard Co.), ₱ doz $4.50
Triumph (T. & S. Mfg. Co.), ₱ gro $10.50@$11.50
Advance, No. 1.....₱ gro $10.50
Advance, No. 2.....₱ gro $10.00
Bryant's.....₱ gro $15.00
Ayres' Spiral.....₱ gro $5.00
Double (H. & R. Mfg. Co).....₱ gro $16.20
Easy (H. & R. Mfg. Co.).....₱ gro $14.00
Triple (H. & R. Mfg. Co.).....₱ gro $16.20
Spiral (H. & R. Mfg. Co.).....₱ gro $4.50
Paine, Diehl & Co.'s.....₱ gro $24.00

Egg Poachers—
Buffalo Steam Egg Poachers, ₱ doz, No. 1, $6.00; No. 2, $9.00.....25%

Electric Bell Sets.—
Wollensak's.....20%
Bigelow & Dowse.....20%

Emery— No. 4 to 46 gr. | No. 54 to 150 gr. | Flour, CF FF.

Kegs, ₱ ℔	4½¢	5 ¢	2½¢
½ kegs, ₱ ℔	4¾¢	5¼¢	2¾¢
¼ kegs, ₱ ℔	5 ¢	5½¢	3 ¢
10-℔ cans, 10 in case	6 ¢	6½¢	5 ¢
10-℔ cans, less than 10	10 ¢	10 ¢	7½¢

Enameled and Tinned Ware—
See Hollow-Ware.

Escutcheon Pins—
Iron, list Nov. 11, 1885..50&10@50&10&5%
Brass.....60@60&5%

Escutcheons.
Door Lock....Same dis as Door Locks.
Brass Thread.....60@60&10%
Wood.....25%

Faucets.—
Fenn's.....40%
Bohren's Pat. Rubber Ball.....25%
Fenn's Cork Stops.....33⅓&5
Star.....60%
Frary's Pat. Petroleum.....40&5&2%
B. & L. B. Co.
West's Lock, Open and Shut Key...50%
Star, Metal Plug, new list.....40%
Lockport, Metal Plug, reduced list..60%
Metallic Key, Leather Lined...60&10@60&10&10%
Cork Lined.....70&5@70&10%
Burnside's Red Cedar.....50%
Burnside's Red Cedar, bbl lots....50&10%
John Sommers'
Peerless Best Block Tin Key.....40%
IXL, 1st quality, Cork Lined.....50%
Diamond Lock.....40%
Perfection, Fla. Red Cedar.....50%
Goodenough Cedar.....50%
Boss Metallic Key.....50%
Reliable Cork Lined.....60%
Western Pattern Cork Lined.....50%
Self-Measuring
Enterprise, ₱ doz $50.00.....20&10%
Lane's, ₱ doz $36.00.....25&10%
Victor, ₱ doz $36.00.....25 &10%

Felloe Plates.....₱ ℔ 6@6½¢

Fifth Wheels.—
Derby and Cincinnati.....45&5%

Files—
Domestic—
Nicholson Files, Rasps, &c.....60&10@60&10&5%
Nicholson (X. F.) Files.....25%
Nicholson's Royal Files (Seconds).....75% (extra prices on certain sizes)
Other makers, best brands 60&10@60&10&10%
Fair brands.....60&10&10@70%
Second quality.....70&10@75&10%
Nicholson's Horse Rasps....60&10@60& 10&5%
Heller's Horse Rasps.....50&7½@50&10%
McCaffrey's Horse Rasps.....50&10%
Chelsea Horse Rasps, Hand Cut...50&10%
Imported—
J. & Riley Carr....List, April 1, 1883, 15%
J. & Riley Carr Horse Rasps.....10%
Moss & Gamble....List, April 1, 1883, 15%
Butcher.....Butcher's list, 20%
Stubs.....Stubs list, 25@30%
Turton's.....Turton's list, 20@25%
Greaves' Horse Rasps..American list, 60%

Fluting Machines—
Knox, 4½-inch Rolls.....$3.25 each } 35%
Knox, 6-inch Rolls.....$3.60 each }
Eagle, 3¾-inch Roll, $2.15.....35%
Eagle, 5½-inch Roll, $2.85.....35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each.....35%
Crown Jewel, 6 in.....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each.....35%
Domestic Fluter.....each, $1.50
Geneva Hand Fluter, White Metal ₱ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.50; 3, $10.00.....30%
Shepard Hand Fluter, No. 85 ₱ doz $15.30.....40%
Shepard Hand Fluter, No. 110 ₱ doz $11.00.....40%
Shepard Hand Fluter, No. 95 ₱ doz $8.00.....40%
Clark's Hand Fluter.₱ doz $15.00.....35%
Combined Fluter and Sad Iron, ₱ doz $15.00.....30%
Buffalo.....₱ doz $10.00.....10%

Fluting Scissors—.....45%

Fodder Squeezers—
Blair's.....₱ doz $2.00
Blair's "Climax".....₱ doz $1.25

Forks—
Hay, Manure, &c., Asso. List.....65%
Hay, Manure, &c., Phila. List 60@60&5%
Plated, see Spoons.

Freezers, Ice Cream—
Buffalo Champion.....65&65&5%
Shepard's Lightning.....65 @ 65&5%
White Mountain.....50&20&5%
New Arctic.....50&40&5%
American.....60%
Gem.....65%
Blizzard.....70%
Double Action Crown.....60%
Crown.....60%
Star.....60%
Peerless and Giant.....60&10
Zero and Pet.....65&10
Boss.....65&10&10

Fruit and Jelly Presses—
Enterprise Mfg. Co.....20&10@30%
Henis.....₱ doz $2.50
Shepard's Queen City.....40%

Fry Pans—

High List	0	1	2	3	4
₱ doz	$3.75	$4.70	$5.30	$5.95	$6.55
No.	5	6	7	8	
₱ doz	$7.50	$8.75	$10.00	$11.25	

Low List	0	1	2	3	4
₱ doz	$3.00	$3.75	$4.25	$4.75	$5.25
No.	5	6	7	8	
₱ doz	$6.00	$7.00	$8.00	$9.00	

Fuse— ₱ 1000 ft
Common Hemp Fuse,for dry ground.$2.70
Common Cotton Fuse,for dry ground 2.85
Single Taped Fuse, for wet ground.. 4.25
Double Taped Fuse, for very wet gr. 5.40
Triple Taped Fuse, for very wet gr.. 6.50
Small Gutta Percha Fuse, for water. 7.50
Large Gutta Percha Fuse, for water.12.00

Gauges—
Marking, Mortise, &c.....60&10%
Starrett's Surface, Center and Scratch, 25&10%
Wire, low list.....10&10%
Wire, Wheeler, Madden & Co.....10%
Wire, Morse's.....50@50&5%
Wire, Brown & Sharpe's.....10@20%

Gimlets—
Nail and Spike.....50&10&5%
"Eureka" Gimlets.....40&10%
"Diamond" Gimlets.....₱ gr $5.00
Double Cut, Shepardson's.....45@45&5%
Double Cut, Ives'.....60@60&5%
Double Cut, Douglass'.....40&10%
"Bee,"₱ gr $12.....25@25&5%

Glue—
Le Page's Liquid.....25@25&5%
Upton's Liquid.....35%
Le Page & Co.'s Improved Process 25@25&5%

Glue Pots—
Tinned.....40%
Enameled.....40&5%
Family, Howe's "Eureka".....40%
Family, L. F. C.'s "Handy".....50%

Grindstones—
Small, at factory.....₱ ton $7.50@9.00

Grindstone Fixtures—
Sargent's Patent.....70&10%
Reading Hardware Co.....30&10%

Hack Saws.—
See Saws.

Halters—
Covert's, Rope, ½-in. Jute.....50&2%
Covert's, Rope, ½-in. Hemp.....40&2%
Covert's Adj. Rope Halters.....40&2%
Covert's Hemp Horse and Cattle Tie. 50&2%
Covert's Jute Horse and Cattle Ties, 60&10&2%

Hammers—
Handled Hammers—
Maydole's, list Dec. 1, '85.....25&10@35%
Buffalo Hammer Co.... } List Jan. 15, '87
Humason & Beckley... } 50@50&10%
Atha Tool Co.....
Fayette R. Plumb.....40&10@50%
C. Hammond & Son.....40&10@50%
Verree.....5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles.....20@25
Peck, Stow & Wilcox.....40%
Sargent's.....33⅓&10%
Heavy Hammers and Sledges—
3 ℔ and under.....₱ ℔ 40¢ } 60&10
3 to 5 ℔.....₱ ℔ 30¢ } &10 @ 70%
Over 5 ℔.....₱ ℔ 30¢ }
Wilkinson's Smiths.....10¼¢@11¢₱ ℔

Handcuffs and Leg Irons—
R. I. Tool Co., Handcuffs, $15.00₱ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₱ doz 10%
Tower's.....25%
Daley's Improved Handcuffs: 2 Hands, Polished, ₱ doz $48.00; Nickeled, $57.00; 3 Hands, Polished, ₱ doz $72.00; Nickeled, $84.00.....25

Handles—
Iron, Wrought or Cast—
Door or Thumb.

Nos.	0	1	2	3	4
Per doz	$0.90	1.00	1.18	1.35	1.50

60&10&10%
Roggin's Latches.....₱ doz 30@@35¢
Bronze Iron Drop Latches..₱ doz 70¢ net
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no Plate, $0.88.....net
Barn Door, ₱ doz $1.40.....10&10%
Chest and Lifting.....70%
Handles, Wood—
Saw and Plane.....40&10@40&10&5%
Hammer, Hatchet, Axe, Sledge, &c...40%
Brad Awl.....₱ gr $2.00
Hickory Firmer Chisel, ass'd. ₱ gr 4.50 } 40% dis
Hickory Firmer Chisel, large. ₱ gr 5.00 }
Apple Firmer Chisel, ass'd.. ₱ gr 5.00 }
Apple Firmer Chisel, large...₱ gr 6.00 }
Socket Firmer Chisel, ass'd..₱ gr 3.00 }
Socket Framing Chisel, ass'd. ₱ gr 5.00 }
J. S. Smith & Co.'s Pat File.....50%
File, assorted.....₱ gr 2.75 } 40@ 40&10%
Auger, assorted.....₱ gr 5.00 }
Auger, large.....₱ gr 7.00 }
Pat. Auger, Ives'.....30&10%
Pat. Auger, Douglass'.....₱ set $1.25
Pat. Auger, Swan'.....₱ set $1.00
Hoe Rake Shovels &c.....50&10%

Cross-Cut Saw Handles—
Atkins' No. 1 Loop, ₱ pair, 28¢; No. 3, 18¢; No. 6, 16¢; No. 2 and No. 4 Reversible, 18¢.
Boynton's Loop Saw Handles, 50¢... 60%
Champion....15¢

Hangers—
Barn Door, old patterns...60&10&10@70%
Barn Door, New England..60&10&10@70%
Samson Steel Anti-Friction....55%
Orleans Steel....55%
Hamilton Wrought Wood Track....55%
U. S. Wood Track....65%
Champion....60&10%
Rider and Wooster, Medina Mfg. Co.'s list....70%
Climax Anti-Friction....60%
limax Anti-Friction for Wood Track..55%
Zenith for Wood Track....55%
ed's Steel Arm....50%
allenge, Barn Door....50%
Sterling's Imp'ved (Anti-Friction)..65&10%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00....50&2%
Cheritree....50&10%
Kidder's....50&10@60%
The Boss....60&10%
Best Anti-Friction....60&10%
Duplex (Wood Track)....60&10&5%
Terry's Pat., ₱ doz pr. 4 in, $10.00; 5 in, $12.00....50&5@50&10%
Cronk's Pat., No. 4, $12.00; No. 5, $14.40; No. 6, $18.00....50&15@60%
Wood Track Iron Clad, ₱ ft. 10¢....50 &15@60%
Carrier Steel Anti-Friction....50@50&5%
Architect, ₱ set $6.00....20%
Eclipse....20&10%
Felix, ₱ set $4.50....20%
Richards'....30@30&10%
Lane's Steel Anti-Friction....50%
Ball Bearing Door Hanger..20&10@25&10%
Warner's Pat....20@20&10%
Stearns' Anti-Friction....20@20&10%
Stearns' Challenge....25&10@25&10&10%
Faultless....40@40&5%
American, ₱ set $6.00....20&10%
Rider & Wooster, No. 1, 62½¢; No. 2, 75¢....40%
Paragon, Nos. 1, 2 and 3....40&10%
Paragon, Nos. 5, 5½, 7 and 8....20&10%
Crescent....60@60&10%
Nickel, Cast Iron....50%
Nickel, Malleable Iron and Steel....40%
Scranton Anti-Friction Single Strap..33⅓&5%
Scranton Anti-Friction Double Strap..40%
Universal Anti-Friction....40%
Wild West, 4 in. Wheel, $15.00; 5 in. Wheel, $21.00....45%
Star....40&10@40&10&5%
May....50&5@50&10%
Barry, $6.00....40&10%

Harness Snaps—
See Snaps.

Hatchets—
List Jan. 1, 1886.
Isaiah Blood....35@40%
Hunt's Shingling, Lath and Claw..40&5%
Hunt's Broad....40%
Buffalo Hammer Co....40&10@50%
Hurd's....40&10@50%
Fayette R. Plumb....40&10@50%
Wm. Mann, Jr., & Co....50@50&5%
Underhill Edge Tool Co....40&5@40&10%
Underhill's, Haines and Bright....33⅓&5
C. Hammond & Son....40&10@50%
Simmons'....40&10@50%
Peck's....40&10@40&10&5%
Kelly's....50@50&5%
Sargent & Co....50%
Ten Eyck Edge Tool Co.40&10@40&10&5%
Collins....10%
Schulte, Lohoff & Co....50@50&5%

Hay and Straw Knives—
Lightning...Mfrs'. price ₱ doz $18.00, 25% But jobbers frequently give extras.
Gem....₱ doz $10
Wadsworth's....40&7½@40&10%
Carter's Needle....₱ doz $11.50@$12.00
Heath's....₱ doz $13.50@14.00
Auburn Hay, Com. and Spear Point..50%
Auburn, Straw....40%
Nolin's Hay....₱ doz $10.00

Hinges—
Wrought Iron Hinges
Strap and T....75&5@75&10%
Screw Hook and Strap: 6 to 12 in., ₱ ℔ ..3¼¢; 14 to 20 in., ₱ ℔ .. 3¼¢; 22 to 36 in., ₱ ℔ ..2½¢
Heavy Welded Hook: 6 to 12 in., ₱ ℔ ..3¼¢; 14 to 20 in., ₱ ℔ .. 3¼¢; 22 to 36 in., ₱ ℔ ..2¾¢
Screw Hook and Eye: ⅛ in., ₱ doz $1.50; ⅜ in., ₱ doz $2.45; ¾ in., ₱ doz $3.80 — 10%
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 232 and 234 55&10%
Rolled Plate....70&10%
Rolled Raised....70&10%
Plate Hinges / "Providence": 8, 10 & 12 in., ₱ ℔ ....5%; over 12 in., ₱ ℔ 4%
Spring Hinges—
Geer's Spring and ank Butts....40%
Union Spring Hir Co.'s list, March, 1886....20%
Acme....30%
U. S....25&10%
Empire and Crown....20%
Hero and Monarch....55%
American, Gem, and Star....20%
Oxford....20%
Barker's Double Acting....20&10%
Union Mfg. Co....25%
Bommer's....30%
Buckman's....15@20%
Chicago....30%
Wells'....10%
Devore's....40%
Rex....40%
Royal....60%
Reliable....60%
Champion....60%
Gate Hinges—
Western....₱ doz $4.40, 60%
N. E....₱ doz $7.00, 55%
N. E. Reversible....₱ doz $6.20, 55&10%
Clark's, Nos. 1, 2, 3....60&10&5%
N. Y. State....₱ doz $5.00, 55&10%
Automatic....₱ doz $12.50, 50%
Common Sense....₱ doz pair $4.50, 50%
Seymour's....45&10%
Shepard's....60&10&5%
Reed's Latch and Hinges. ₱ doz $12.00, 50%
Blind Hinges—
Parker....75&2%
Palmer....50&5&10%
Seymour....70&2%
Nicholson....45&10%
Huffer....50%
Clark's, Nos. 1, 3, 5, 40 and 50....75&10&5@80¢
Clark's Mortise Gravity....50%
Sargent's, Nos. 1, 3, 5, 11, 13....75&10@55&10&5%
Sargent's, No. 12....77&10&10%
Reading's Gravity....75&10@75&10&5%
Shepard's
Noiseless....75&10&5%
Niagara....80&2½%
Buffalo....80&5%
Clark's Genuine Pat....80&5%
O. S., Lull & Porter....75&10@80%
Acme, Lull & Porter....75&5%
Queen City Reversible....75%
Clark's Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3....75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $10.50; No. 3, for Brick, $13.50....25&2%

Hoes—
Handled—
Garden, Mortar, &c....65%
Planter's, Cotton, &c....65%
Warren Hoe....60%
Magic....₱ doz $4.00
Eye—
D. & H. Scovil....20%
Lane's Crescent Planters Pattern..45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat....45&5%
Sandusky Tool Co., S. & O. Pat....60%
Hubbard & Co., S. & O. Pat....60%
Chattanooga Tool Co., S. & O. Pat....60%
Grub....60@60&10%

Hog Rings and Ringers—
Hill's Improved Ringers....₱ doz $4.25
Hill's Old Style Ringers....₱ doz $2.75
Hill's Tongs....₱ doz $4.50
Hill's Rings....₱ doz bxs $2.15@2.25
Perfect Rings....₱ doz bxs $1.60@1.70
Perfect Ringers....₱ doz $2.15@$2.25
Blair's Hog Ringers....₱ doz $2.25@2.50
Blair's Hog Rings....₱ doz 90¢@$1.00
Champion Ringers....₱ doz $2.00
Champion Rings, Double....₱ doz $2.25
Brown's Ringers....₱ doz $2.00
Brown's Rings....₱ doz $1.25@1.30

Hoisting Apparatus—
Moore's Hand Hoist, with Lock Brake....20%
Moore's Differential Pulley Block....40%
Energy Mfg. Co's....25%

Holders, File and Tool—
Balz Pat....₱ doz $4.00; 25%
Nicholson File Holders....20%

Hollow-Ware—
Iron—
Stove Hollow-Ware—
Ground....60@60&5%
Unground....60&10@60&10&10%
Boilers and Saucepans....40&5%
Tinned Boilers and Saucepans....40%
Gray Enameled-Ware—
Stove....45@50%
Maslin Kettles....60&10@60&10&10%
Boilers and Saucepans....40&5%
Agate and Granite Ware, list Jan. 1, 1889....33⅓&10%
Rustless Hollow-Ware....50@50&5%
Galvanized Tea-Kettles—

Inch	6	7	8	9
Each....	55¢	60¢	65¢	75¢

Silver Plated—
4 mo. or 5 % cash in 30 days.
Reed & Barton / Meriden Britannia Co. / Simpson, Hall, Miller & Co. / Rogers & Brother....40&5%
Hartford Silver Plate Co / William Rogers Mfg. Co....40&5&5%

Hooks—
Cast Iron—
Bird Cage, Sargent's list.... / Bird Cage, Reading.... / Clothes Line, Sargent's list / Clothes Line, Reading list. 60@10&60&10&10%
Ceiling, Sargent's list....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading .50&10&50&10&10%
Wrought Iron—
Cotton....₱ doz $1.25
Cotton Pat. (N.Y. Mallet & Handle W'ks).
Tassel and Picture (T. & S. Mfg. Co.)..50%
Wrought Staples, Hooks, &c. See Wrought Goods.
Wire—
Wire Coat and Hat, Gem, list April, 1886....50%
Wire Coat and Hat, Miles', list April, 1886....50%
Indestructible Coat and Hat....45%
Wire Coat and Hat, Standard....45%
Belt....80@80&10%
Miscellaneous.
Grass, No. 2, $2.00; No. 3, $2.25; No. 4, $2.50
Nolin's Grass....₱ doz $2.25
Bush....55&60%
Whiffletree—Patent....55%
Hooks and Eyes—Malleable Iron. 70&70&10%
Hooks and Eyes—Brass....60&10&10%
Fish Hooks, American....50%
Bench Hooks....See Bench Stops.

Horse Nails—

	Nos. 6	7	8	9	10
Ausable....	28¢	26¢	25¢	24¢	23¢.

25&10@25&10&10%
Clinton, Fin..24¢ 22¢ 21¢ 20¢ 19¢. 40&10@50%
Essex ....28¢ 26¢ 25¢ 24¢ 23¢. 25&10@25&10&10%
Lyra....25¢ 23¢ 22¢ 21¢ 20¢. 40&10&5@50%
Snowden ....25¢ 23¢ 22¢ 21¢ 20¢. 40&10&5@50%
Putnam....23¢21¢ 20¢ 19¢ 18¢. 1000 ℔ in year 15%
Vulcan....23¢ 21¢ 20¢ 19¢ 18¢..12½&5%
Northwest'n.25¢ 23¢ 22¢ 21¢ 20¢. 10&10&5&5%
Globe....23¢ 21¢ 20¢ 19¢ 18¢..20&2½%
Boston....23¢ 21¢ 20¢ 19¢ 18¢.20&2½%
A. C....25¢ 23¢ 22¢ 21¢ 20¢. 25&10@33⅓&5%
C. B.-K....25¢ 23¢ 22¢ 21¢ 20¢. 25&10@33⅓&5%
Champlain .28¢ 6¢ 25¢ 24¢ 23¢. 25&10&10%
New Haven..28¢ 26¢ 25¢ 24¢ 23¢. 25&10@25&10&10%
Saranac....23¢ 21¢ 20¢ 19¢ 18¢...30&10%
Champion...25¢ 23¢ 22¢ 21¢ 20¢. 10&10&10%
Capewell....28¢ 26¢ 25¢ 24¢ 23¢. 35&5@35&10%
Star....23¢ 21¢ 20¢ 19¢ 18¢. 10&10@10&12½%
Anchor....23¢ 21¢ 20¢ 19¢ 18¢....35%
Western....23¢ 21¢ 20¢ 19¢ 18¢...40&10%
Empire Bronzed....14 ₱ ℔.

Horse Shoes—See Shoes Horse.

Hose, Rubber—
Competition....75&10@75&10&5%
Standard....70@70&10%
Extra....6C@60&10%
N. Y. B. & P. Co., Para....30&10%
N. Y. B. & P. Co., Extra....50%
N. Y. B. & P. Co., Dundee....60&10&5%

Huskers—
Blair's Adjustable....₱ gr $8.00
Blair's Adjustable Clipper....₱ gr 7.00

Indurated Fiber-Ware.
Spittoons, No. 2, ₱ doz....$6.75
Basins, Ringed, ₱ doz., No. 1, $3.70; No. 2, $3.10; No. 3....$2.70
Washtubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), ₱ doz. nests....$16.87
Keelers, Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₱ doz. nests....$8.37
Butter Bowls 15, 17 and 19-inch (3 pieces), ₱ doz. nests....$6.75
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces) ₱ set....$3.00
Dry Measures, 1, 2, 4, 8 and 16 qts. (5 pieces), ₱ set....$2.25
See also *Pails.*

Jack Screws—See Screws.

Kettles— Spun. Stamped.
Brass, 7 to 17 in., ₱ ℔.... 24¢ 21 ¢
Brass larger than 17 in., ₱ ℔.... 28¢ 23½¢
Enameled and Tea Kettles. See *Hollow-Ware.*

Keys—
Lock Asso'n list Dec. 30, 1886...50&10@ 60&5%
Eagle, Cabinet, &c....33⅓&2%
Hotchkiss' Brass Blanks....40%
Hotchkiss, Copper and Tinned....40%
Hotchkiss' Pad. and Cab....35%
Ratchet Bed Keys....₱ doz $4.00, 15%
Wollensak Tinned....50&10%

Knife Sharpeners—
Parkin's.
Applewood Handles...₱ doz $6.00, 40%
Rosewood or Cocobolo. ₱ doz $9.00, 40%

Knives—
Wilson's Butcher Knives....25@30%
Ames' Butcher Knives....25%
Foster Bros.' Butcher, &c....40%
Nichols' Butcher Knives....40&10%
Ames' Shoe Knives....20@25%
Ames' Bread Knives. ₱ doz $1.50, 15@20%
Moran's Shoe and Bread....20%
Hay and Straw....See Hay Knives.
Table and Pocket....See Cutlery.
Corn, Auburn Mfg. Co. Western Pat., $2.00
Corn, Auburn Mfg. Co. Crescent....$3.50

Knobs—
Door Mineral....65@68%
Door Por. Jap'd....75@78%
Door For. Nickel....$2.00@2.25
Door Por. Plated, Nickel....$2.00@2.25
Drawer, Porcelain....60&10@60&10&10%
Hemacite Door Knobs....40&10@50%
Yale & Towne Wood, list Dec., 1885...40%
Furniture Plain....75¢ gro inch, 10%
Furniture, Wood Screws....25&10%
Base, Rubber Tip....70&10&5%
Picture, Judd's....60&10&10@70%
Picture, Sargent's....70&10%
Picture, Hemacite....35&5%
Shutter, Porcelain....65&10%
Carriage, Jap....₱ gro 80¢, 60&10%

Ladles.—
Melting, Sargent's....55&10%
Melting, Reading....35&10%
Melting, Monroe's Pat...₱ doz $4.00, 40%
Melting, P. S. & W....35&10@40%
Melting, Warner's....30%

Lawn Mowers—
Standard List....50&10%
Quaker City....60&10%
Enterprise....60&10%

Lanterns—
Tubular—
Plain with Guards, ₱ doz....$4.00@4.25
Lift Wire, with Guards....$4.50@4.75
Square Plain, with Guards....$4.00@4.25
Sq. Lift Wire, with Guards....$4.25@4.50
Without Guards, 25¢ ₱ doz less.
Miscellaneous.
Police, Small, $6.00; Medium, $7.25; Large, $9.75....20@25%

Lemon Squeezers—
Porcelain Lined, No. 1....₱ doz $6.00, 25&30%
Wood, No. 2....₱ doz $3.00, 25%
Wood, Common....₱ doz $1.70@1.75
Dunlap's Improved ....₱ doz $3.75, 20%
Sammis....No. 1, $5.00; No. 2, $9; 12, $18 ₱ doz....25&10%
Jennings' Star....₱ doz $2.50
The Boss....₱ doz $2.50
Dean's..Nos. 1, ₱ doz $6.50; 2, $3.35; 3, $1.90
Little Giant....50@50&5%
King....40&5%

Lines—
Cotton and Linen Fish, Draper's....50%
Draper's Chalk....60%
Draper's Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25....25%
Cotton Chalk....55%
Samson, Cotton, No. 4, $2; No. 4½, $2.50; 10%
Silver Lake, Braided, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₱ gro....25%
Mason's Linen, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50.
Mason's Colored Cotton....45%
Wire Clothes.. Nos. 18 19 20 $3.60 $3.00 $2.5
Ventilator Cord, Samson Braided, White or Drab Cotton..₱ doz $7.50, 20%

Locks, &c.—
Door Locks, Latches, &c.
List Dec. 30, '86, chgd Feb. 2, '87.... 50&10@60&10%
R. & E. Mfg.Co.,list Mar.20, 1889..60&10%
Mallory, Wheeler & Co., list July, '88 50&10@60@10%
Sargent & Co., list Aug. 1, '88..55&2& 10@60&10&5%
Reading Hardware Co., list Feb. 2, '88 55@60&10%
Note.—Lower net prices often made.
Perkins' Burglar Proof....60@25%
Plate....33⅓&2%
F. Many's "Extension Cylinder" $10.50 ₱ doz.
Barnes Mfg. Co....40@40&10%
Yale....net prices
Deitz Flat Key....30%
L. & C. Round Key Latches....30&10%
L. & C. Flat Key Latches....33⅓&10%
Romer's Night Latches....15%
Shepardson or U. S....35%
Felter or American....40&10%
Seed's N. Y. Hasp Lock....25%
Cabinet—
Eagle, Gaylord Parker and Corbin... / Diamond / Deitz, Nos. 36 to 39... / Deitz, Nos. 51 to 63... / Deitz, Nos. 86 to 96... / Stoddard Lock Co.... / "Champion" Night Latches.... / Barnes Mfg. Co.... / Eagle and Corbin Trunk.... / "Champion" Cab. and Combin... / Yale.... / Romer's.... List March, '84, rev Jan.1,'85..33⅓&2% 40% 40% 30% 30&33⅓% 40% 40&40&10% 25&2% 33⅓% net prices 25%
Padlocks—
List Dec. 23, '84....75@75&10%
Yale Lock Mfg. Co.'s....net prices
Eagle....25&2%
Eureka, Eagle Lock Co....40&2%
Romer's, Nos. 0 to 91....30%
Romer's Scandinavian, &c., Nos. 100 to 505..15%
A. E. Deitz....40%
Champon Padlocks....40%
Hotchkiss....30%
Star....45%
Horseshoe....₱ doz, $9, 40@40&10%
Barnes Mfg. Co....40@40&10%
Nock's....30%
Brown's Pat....25%
Scandinavian....90@90&10%
Fraim's Pat. Scandavian low list....60%
Ames Sword Co. up to No. 150....40%
Ames Sword Co. above No. 150....50%

Lumber Tools.
Ring Peavies, "Blue Line"...₱ doz $20.00
Ring Peavies, Common....₱ doz $18.00
Steel Socket Peavies....₱ doz $21.00
Mall. Iron Socket Peavies....₱ doz $19.00
Cant Hooks, "Blue Line"...₱ doz $16.00
Cant Hooks, Common Finish..₱ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish....₱ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish....₱ doz $14.00
Cant Hooks, Clip Clasp, Common Finish....₱ doz $12.00
Hand Spikes....₱ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₱ doz., 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₱ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not Ironed, ₱ doz, 12 ft. $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₱ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00
Swamp Hooks....₱ doz $18.00

Lustro—
Four-ounce Bottles....₱ doz, $1.75; ₱ gross....$17.00

Mallets—
Hickory....20&10@20&10&10%
Lignumvitæ....20&10@20&10&10%
B. & L. Block Co., Hickory & L. V. 30@30&10%

Match Safes—
Dangerfield's Self-Igniting...₱ doz $1.50

Mattocks. Regular list....50&10&5@60%

Meat Cutters—
Dixon's ₱ doz.... 40&5%
Nos.... 1 2 3
$14.00 $17.00 $20.00
Woodruff's ₱ doz.... 40&5%
Nos.... 100 150
$15.00 $18.00
Champion ₱ doz.... 40&45%
Nos.... 200 300 400
$22.00 $27.00 $40.00
Hales Pattern ₱ doz.... 70@70&5%
Nos.... 13 11 12
$27.00 $33.00 $45.00
American.... 30%
Nos.... 1 2 3 4 B 5
Each....$5 $7 $10 $25 $50 $60
Enterprise.... 30%
Nos.... 10 12 22 32 42
Each....$3 $2.50 $4 $6 $15
Pennsylvania.... 40&10%
Nos.... 1 2 3 00
₱ doz....$24.00 $28.00 $36.00 $28.00
Miles' Challenge ₱ doz.... 45@45&10%
Nos.... 1 2 3
$22.00 $30.00 $40.00
Home No. 1....₱ doz, $26.00, 55&10%
Draw Cut, each:
Nos..5 2 6 8
$50 $75 $80 $225 ....20@25%
Beef Shavers (Enterprise)....20&10@30%
Chadborn's Smoked Beef Cutter. ₱ doz $66.00

Mincing Knives—
Am. (2d quality, ₱ gr., 1 blade, $7; 2 blades, $12; 3 blades, $18....net
Lothrop's....20&10%
Smith's, ₱ doz, Single, $2.00; Double, $3 40@45%
Knapp & Cowles....50&10@60%
Buffalo Adjustable. ....₱ doz. $3.00, 25%

Molasses Gates—

Stebbin's Pat. ..... 70@70&7½%
Stebbin's Genuine ..... 60&10&10%
Stebbin's Tinned Ends ..... 40&10%
Chase's Hard Metal ..... 50&10%
Bush's 20%
Lincoln's Pattern. ..... 70@70&10
Weed's. ..... 20&10%

Boss, ₱ doz:
Nos. 1, $7; No. 2, $8; No. 3, $9; No. 4 $10 ..... 60&10&10%

Money Drawers....₱ doz, $18@$20

Muzzles—

Safety ..... ₱ doz, $3.00, 25 %

Nails, see Trade Report.

Wire Nails, Papered.
See Trade Report.
Tack Mfrs.' list ..... 70&10%
Wire Nails, Standard Penny.
Card June 1, '89, base ..... $2.40@$2.50

Nail Puller—

Curtiss Hammer ..... ₱ doz $9.00
Giant, No. 1 ..... ₱ doz. $50.00, 10%
Pelican ..... ₱ doz, $9.00, 25%
Boss ..... ₱ doz, $30.00, 30%
Lightning ..... ₱ doz $21.00

Nail Sets—

Square ..... ₱ gr., $4.00@$4.25
Round ..... ₱ gr. $3.25
Cannon's Diamond Point...₱ gr.,$12, 20%

Nut Crackers—

Table (H. & B. Mfg. Co.) 40%
Blake's Pattern ..... ₱ doz $2.00, 10%
Turner & Seymour Mfg. Co. 50%

Nuts—

Nuts, off list Jan. 1, 1888: Square. Hex.
Hot Pressed ..... 5.4¢ 5.9¢
Cold Punched ..... 5.4¢ 5.5¢
In lots less than 100 ℔, ₱ ℔, add ½¢; 1-℔ boxes, add 1¢ to list.

Oakum—
Government ..... ₱ ℔ 7¾ @8 ¢
U. S. Navy ..... ₱ ℔ 6¾ @ 7¢
Navy ..... ₱ ℔ 5¾¢@6¼¢

Oilers—

Zinc and Tin ..... 65@65&10%
Brass and Copper ..... 50&10&50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₱ doz. 10&10&10%
Malleable, Hammers, Old Pattern, same list 40%
Prior's Pat. or "Paragon" Zinc, 60&10&10%
Prior's Pat. or "Paragon" Brass 50%
Olmstead's Tin and Zinc 60%
Olmstead's Brass and Copper 50%
Broughton's Zinc 60%
Broughton's Brass 50%

Packing, Steam—
Rubber—

Standard ..... 60&10@60&10&10%
Extra ..... 50&10&60%
N. Y. B. & P. Co., Standard ...50&10&5%
N. Y. B. & P. Co., Empire 70%
N. Y. B. & P. Co., Salamander. ₱ ℔ 65¢, 30%
Jenkins' Standard ..... ₱ ℔ 80¢, 35%

Miscellaneous—

American Packing ..... 10@11¢ ₱ ℔
Russia Packing ..... 14¢ ₱ ℔
Italian Packing ..... 13¢@14¢ ₱ ℔
Cotton Packing ..... 15¢@17¢ ₱ ℔
Jute ..... 7¢@8¢ ₱ ℔

Padlocks—

See Locks.

Pails—

Galvanized Iron—

Quarts	10	12	14
Hill's Light Weight, ₱ doz.	$2.75	3.00	3.25
Hill's Heavy Weight, ₱ dz.	3.00	3.25	3.75
Whiting's	2.75	3.00	3.25
Sidney Shephard & Co.	2.80	3.00	3.40
Iron Clad	2.75	3.00	3.25
Fire Buckets	2.75	3.25	3.50

Buckets, see Well Buckets.

Indurated Fibre Ware—

Star Pails, 12 qt ..... ₱ doz $4.50
Fire, Stable and Milk, 14 qt .. ₱ doz $5.85

Standard Fibre Ware—

	Plain.	Decr'd
Water Pails, 12 qt., per doz.	$4.00	$4.50
Dairy Pails, 14 qt., per doz.	4.50	5.00
Fire Pails, No. 1, 12 qt. per doz	5.00	
Fire Pails, No. 2, 14 qt. per doz	4.50	

Pencils—

Faber's Carpenters' ..... high list 50%
Faber's Round Glit ..... ₱ gro $5.25
Dixon's Lead ..... ₱ gro $4.50
Dixon's Lumber ..... ₱ gro $6.75
Dixon's Carpenters' ..... 40&10%

Picks—

Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00 ..... 50&10&5 @ 60%

Picture Nails—

Brass Head, Sargent's list ..... 50&10&10%
Brass Head, Combination list ..... 50&10%
Porcelain Head, Sargent's list. 50&10&10%
Porcelain Head, Combination list..40&10%
Niles' Patent 40%

Pinking Irons— ₱ doz 65¢ net

Pipe, Wrought Iron—
List March 23, 1887.

1¼ and under, Plain 52½%
1¼ and under, Galvanized 45%
1½ and over, Plain 65%
1½ and over, Galvanized 52½%
Boiler Tubes, Iron.
1¾ and under 55%
2 in. and larger 60%

Planes and Plane Irons—

Wood Planes—

Molding ..... 50&5&50&10%
Bench, First Quality ..... 60&60&5%
Bench, Second Quality. 60&10&60&10&10%
Bailey's (Stanley R. & L. Co.) ..... 40&10%

Iron Planes—

Bailey's (Stanley R. & L. Co.) ..... 40@10%
Miscellaneous Planes (Stanley R. & L. Co.) ..... 20&10%
Victor Planes (Stanley R. & L. Co.). 20&10%
Steer's Iron Planes ..... 35&35&5%
Meriden Mal. Iron Co.'s. 30&10&30&10&10%
Davis's Iron Planes ...30&10&30&10&10%
Birmingham Plane Co. ..... 50&50&5%
Gage Tool Co.'s Self-Setting ..... 20&10%
Chaplin's Iron Planes ..... 40@40&5%
Sargent's ..... 30&10&30&10&10%

Plane Irons—

Plane Irons ..... 20&10%
Plane Irons, Butcher's...$5.00@$5.25 to £
Plane Irons, Buck Bros 30%
Plane Irons, Auburn Tool Co., "Thistle" 40%
Sandusky Tool Co.:
Single and Cut 30%
Double 40%
L. & I. J. White 25%

Pliers and Nippers—

Button's Patent ..... 30&10@40%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in. $21.00 ₱ doz ..... 20&10@30%%
Humason & Beckley Mfg. Co. .50@50&10%
Gas Pliers 60%
Gas Pliers, Custar's Nickel Plated. 60&5%
Eureka Pliers and Nippers 40%
Russell's Parallel. 25%
P. S. & W. Cast Steel 50%
P. S. & W. Tinners' Cutting Nippers, add 6% dis 10%
Carew's Pat. Wire Cutters 20%
Morrill's Parallel, ₱ doz, $12.00....30&5%
Cronk's 8 in., $15.00; 10 in. $21.00, 40@40&5%

Plumbs and Levels—

Regular List ..... 70&10@70&10&10%
Disston's ..... 45&10%
Pocket Levels ..... 70&10@70&10&10%
Davis Iron Levels 30%
Davis' Inclinometers ..... 10&10%

Polish, Metal.

Prestoline ..... 20&10%
Krestoline Paste 33⅓%
Gaston's Silver Compound 33⅓%

Pokes, Animal—

Bishop's I. X. L. ..... ₱ doz $6.50
Bishop's O. K. ..... ₱ doz $5.50
Bishop's Pioneer ..... ₱ doz $3.75
Bishop's American ..... ₱ doz $3.00

Poppers, Corn—

Round or Square, 1 qt.. ₱ gr $12.00@15.00
Round or Square, 2 qt.. ₱ gr $25.00@26.00

Post Hole and Tree Augers and Diggers—

Samson Post Hole Digger, ₱ doz $36.00, 25&10%
Fletcher Post Hole Augers, ₱ doz $36, 20%
Eureka Diggers ..... ₱ doz $16.00@17.00
Leed's ..... ₱ doz $8.00@9.00
Vaughan's Post Hole Auger, ₱ doz $13.00@14.00
Kohler's Little Giant ..... ₱ doz $18.00
Kohler's Hercules ..... ₱ doz $15.00
Kohler's New Champion ..... ₱ doz $9.00
Schneidler ..... ₱ doz $18.00
Ryan's Post Hole Diggers ..... ₱ doz $24.00
Cronk's Post Bars, ₱ doz $60.00, 50&5@50&10%
Gibbs Post Hole Digger, ₱ doz $30.00, 50%
Imperial, ₱ doz, $15 ..... 45%

Potato Parers—

White Mountain ..... ₱ doz $5.00@5.50
Antrim Combination ..... ₱ doz $8.00
Hoosier ..... ₱ doz $13.50

Pruning Hooks and Shears—

Disston's Combined Pruning Hook and Saw ..... ₱ doz $18.00, 20&10%
Disston's Pruning Hook, ₱ doz $12.00, 20&10%
E. S. Lee & Co.'s Pruning Tools 40%
Pruning Shears, Henry's Pat, ₱ doz $3.75@4.00 net
Henry's Pruning Shears, ₱ doz $4.25@ 4.50 net
Wheeler, M. & C. Co.'s Combination, ₱ doz $12.00, 20%
Dunlap's Saw and Chisel, ₱ doz $8.50, 30%
J. Mallinson & Co., No. 1, $5.25; No. 2, 7.25

Pulleys—

Hot House, Awning, &c. ..... 60&10%
Japanned Screw ..... 60&10%
Brass Screw ..... 60&10%
Japanned Side ..... 66⅔&10%
Japanned Clothes Line ..... 60&10%
Empire Sash Pulley ..... 55@60%
Moore's Sash, Anti-Friction 50%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50 ..... 50&10&50&10&5%
Hay Fork, "Anti-Friction," 5 in. Solid, $5.70 ..... 50%
Hay Fork, "F" Common and Pat. Bushed 20%
Hay Fork, Tarbox Pat. Iron 20%
Hay Fork, Reed's Self-Lubricating ...60%
Shade Hack 45%
Tackle Blocks ..... See Blocks
Moore's Anti-Friction 5 in. Wheel, ₱ doz $12.00 ..... 40%

Pumps—

Cistern, Best Makers ..... 50&10@60%
Pitcher Spout, Best Makers ..60&10@60 &10&10%
Pitcher Spout, Cheaper Goods...70&5@ 70&10&5%

Punches—

Saddlers' or Drive, good, ₱ doz...60@65¢
Bemis & Call Co.'s Cast Steel Drive..50&5%
Bemis & Call Co's Springfield Socket..50&5%
Spring, good quality.... ₱ doz $2.50@2.60
Spring, Leach's Pat 15%
Bemis & Call Co.'s Spring and Check ..40%
Solid Tinners' ..... ₱ doz $1.44, 55%
Tinners' Hollow Punches ..... 20&2%
Rice Hand Punches 15%
Avery's Revolving 40%
Avery's Saw-Set and Punch. See Saw Sets.

Rail—

Sliding Door, Wr't Brass, ₱ ft 35¢..... 15%
Sliding Door, Bronzed Wr't Iron.. ₱ ft. 7¢
Sliding Door, Painted, ₱ foot 4¢, 40%
Barn Door, Light. In. ⅝ ¾
Per 100 feet $2.00 2.50 3.10, 10%
B. D. for N. E. Hangers—

	Small.	Med.	Large.
Per 100 feet....	$2.15	2.70	3.25..net

Terry's Wrought Iron, ₱ foot ..... 4¾@5¢
Victor Track Rail, 7¢ ₱ foot ..... 50&2%
Carrier Steel Rail, ₱ foot ..... 4½¢
Moore's Wrought Iron 25%

Rakes—

Cast Steel, Association goods 65%
Cast Steel, outside goods ..... 60&10&70%
Malleable ..... 70&70&5%
Gibbs Lawn Rake ..... $12.00, 50&15%
Canton Lawn Rake ..... $9.00, 50&10%
Ft. Madison Prize Bow Brace and Peerless 65%
Fort Madison Steel Tooth Lawn Rake, $6.00 ..... 25%

Razors—

J. R. Torrey Razor Co 20%
Wostenholme and Butcher, $10.00 to £, 10%

Razor Strops—

Genuine Emerson ..... 60@60&5%
Imitation " .... ₱ doz $2.00, 20&10&5%
Torrey's 20%
Badger's Belt and Com ..... ₱ doz $2.00
Lamont Combination ..... ₱ doz $4.00

Rivets and Burrs—

Iron, list Nov. 17, '87 ..... 50%
Copper ..... 50&10%@60%

Rivet Sets ..... 50&10%

Rods—

Stair, Brass ..... 25&2%
Stair, Black Walnut .. .. ₱ doz 40¢

Rollers—

Barn Door, Sargent's list ..... 60&10&10%
Acme Moore's Anti-Friction 55%
Union Barn Door Roller 70%

Rope—

Manufacturers' prices for large lots:
Manila...¼ in. and larger ₱ ℔ 15½¢ (15% for cash in 10 days.)
Manila ..... ⅜ in. ₱ ℔ 15¾¢
Manila..... ¼ and 5-16 in. ₱ ℔ 16 ¢
Manila Tarred Rope..... ₱ ℔ 14¾¢
Manila, Hay Rope..... ₱ ℔ 15¼¢
Sisal...¼ inch and larger ₱ ℔ 12¼¢
Sisal ..... ⅜ in. ₱ ℔ 12¾¢
Sisal..... ¼ and 5-16 in. ₱ ℔ 13¼¢
Sisal, Hay Rope ..... ₱ ℔ 12¼¢
Sisal, Tarred Rope ..... ₱ ℔ 11¾¢
Sisal, Medium Lathe Yarn. ₱ ℔ 11¼¢
Cotton Rope ..... ₱ ℔ 15@18¢ net
Jute Rope ..... ₱ ℔ 8¢

Rules—

Boxwood ..... .80&10&10@80&10&10&5%
Ivory ..... 50@50&10%
Starrett's Rules and Straight Edges, Steel ..... .25&10%

Sad Irons—

From 4 to 10, at factory ...₱ 100 ℔, $2.40@$2.55
Self-Heating ..... ₱ doz $9.00 net
Self-Heating, Tailors' ... ₱ doz $18.00 net
Gleason's Shield and Toilet 25%
Mrs. Pott's Irons ..... 40&40&10%
Enterprise Star Irons 40%
Combined Fluter and Sad Iron, ₱ doz, $15.00 ..... 15%
Fox Reversible, Self-Fluter ₱ doz $24.00
Chinese Laundry (N.E. Butt Co.) 8½¢, 15%
New England ..... 5¢, 15%
Mahony's Troy Pol. Irons 25%
Sensible ..... 20@20&5%
National Self-Heating ..... 30 %

Sand and Emery Paper and Cloth—

List April 19, 1886 ..... 50&50&10%
Sibley's Emery and Crocus Cloth 30%

Sash Cord—

Common ..... ₱ ℔, 10@11¢
Patent, good quality ..... ₱ ℔ 13@13½¢
White Cotton Braided, fair.. ₱ ℔ 28@29¢
Common Russia Sash ..... ₱ ℔ 13½¢
Patent " " ..... ₱ ℔ 15¢
Cable Laid Italian Sash..... ₱ ℔ 22¢@23¢
India Cable Laid " ..... ₱ ℔ 13¢
Silver Lake—
A Quality, White, 50¢ ..... 10&10&5%
A Quality, Drab, 55¢ ..... 10&10&5%
B Quality, White, 50¢ ..... 20&10&5%
B Quality, Drab, 55¢ ..... 20&10&5%
C Quality, White (only) ..... 20½@20&5%
Sylvan Spring, Extra Braided, White, 34¢
Sylvan Spring, Extra Braided, Drab. .30¢
Semper Idem, Braided, White ..... 30¢
Egyptian, India Hemp, Braided ..... 25¢
Samson—
Braided, White Cotton, 50¢...30@30&5%
Braided, Drab Cotton, 55¢.....30@30&5%
Braided, Italian Hemp, 55¢...30@30&5%
Braided, Linen, 80¢ ..... 30@30&5%

Sash Locks—

Clark's, No. 1, $10; No. 2, $8 ₱ gr.. .33⅓%
Ferguson's 33⅓%
Morris and Triumph, list Aug. 16, 1886, 60&2%
Victor ..... 60&10&2%
Walker's 10%
Attwell Mfg. Co. ..... 25&33⅓%
Reading ..... 66⅔&10@66⅔&10&10%
Hammond's Window Springs 40%
Common Sense, Jap'd, Cop'd and Br'zed ..... ₱ gr $4.00
Common Sense, Nickel Plated ₱ gr $10.00
Universal 30%
Kempshall's Gravity 60%
Kempshall's Model ..... 60&60&10%
Corbin's Daisy, list Feb. 15, 1886.....70%
Payson's Perfect ..... 60@60&10%
Hugunin's Sash Balances ..... 25&5&2%
Hugunin's New Sash Locks ..... 25&5&2%
Stoddard "Practical" 10%
Ives' Patent ..... 60@60&10%
Lesche's, Nos. 100 and 110, ₱ gr $8; 105, $10.00 ..... 20&10%
Davis, Bronze, Barnes Mfg. Co. 50%
Champion Safety, list March 1, 1888 55&55&5%
Security 70%
Buckeye ..... ₱ gro $4.80

Sash Weights—

Solid Eyes ..... ₱ ton $22.00

Sausage Stuffers or Fillers—

Milas' "Challenge," ₱ doz $20, 50&50&5%
Perry ..... ₱ doz, No. 1, $15.00; No. 0, $21.00 ..... 50&50&5%
Draw Cut No. 4, each $30.00 ..... 20%
Enterprise Mfg. Co. ..... 20&10&30%
Silver's ..... 40&10%

Saws—

Disston's Circular ..... 45@45&5% (Extras sometimes given by jobbers.)
Disston's Cross Cuts ..... 45@45&5%
Disston's Hand 25@25&5%
Atkins' Circular Shingle and Heading 50&10%
Atkins' Silver Steel Diamond X Cuts ₱ foot 70¢
Atkins' Special Steel Dexter X Cuts ₱ foot 50¢
Atkins' Special Steel Diamond X Cuts ₱ foot 30¢
Atkins' Champion and Electric Tooth X Cuts ..... ₱ foot 24@25¢
Atkins' Hollow Back X Cuts .₱ foot 18¢
Atkins' Mulay, Mill and Drag ..... 40&10%
Atkins' One-Man Saw, with handles, ₱ foot 32¢
W. M. & C., Hand ..... 30&5@30&10%
W. M. & C., Champion X Cuts, Regular ..... ₱ foot 24@26¢
W. M. & C. X Cuts, Thin Back ..... ₱ foot 27¢@29¢
Peace Circular and Mill ..... 45&10%
Peace Hand Panel and Rip ..... 20&10@20&10&10%
Peace Cross Cuts, Standard...₱ foot 25¢
Peace Cross Cuts, Thin Back ₱ foot 27@28¢
Richardson's Circular and Mill 45@45&10%
Richardson's X Cuts, No. 1, 30¢; No. 2, 27¢; No. 3, 24¢

Hack Saws—

Griffin's, complete. ..... 40&10@50%
Griffin's Hack Saw, Blades ..... 40&10@50%
Star Hack Saws and Blades 25%
Diamond Hack Saws and Blades 25%
Eureka and Crescent 25%

Saw Frames—

White Vermont ..... ₱ gro $9.00@10.00
Red, Polished and Varnished..... ₱ doz $1.50, 25%

Saw Sets—

Stillman's Genuine...₱ doz $5.00@7.75, 40&5%
Stillman's Imita..... ₱ doz $3.25@5.25, 40&5@40&10%
Common Lever ..... ₱ doz $2.00, 40&5%
Morrill's No. 1, $15.00; Nos. 3&4, $24.00. 40&10@50%
Leach's...No. 0, $8.00; No. 1, $15, 15@20%
Nash's ..... 20&10@20&10&10%
Hammer, Hotchkiss $5.50, 10%
Hammer, Bemis & Call Co.'s new Pat. 30&5%
Bemis & Call Co.'s Lever and Spring Hammer ..... 30&5%
Bemis & Call Co.'s Plate 10%
Bemis & Call Co.'s Cross Cut 12½%
Aiken's Genuine ..... $13.00, 50&10%
Aiken's Imitation ..... $7.00, 55&5%
Hart's Pat. Lever 20%
Disston's Star, $9, No. 15, $5.50; 20& 10@20&10&10%
Atkin's Lever, ₱ doz No. 1, $6.00; No. 2, $9.60
Atkin's Criterion ..... ₱ doz $7.50
Croissant (Keller), No. 1, $15.00; No. 2, $24.00 ..... 40&10%
Avery's Saw Set and Punch 50%
Am. Tool Co.'s Superior ..... ₱ doz $15, 50%

Saw Tools—

Atkins' Perfection ..... ₱ doz $15.00
Atkins' Excelsior ..... ₱ doz $6.00
Atkins' Giant ..... ₱ doz $4.00

Scales—

Hatch, Counter, No. 171, good quality, ₱ doz $21.00
Hatch, Tea, No. 161.... ₱ doz $6.75@7.00
Union Platform, Plain..... ...$2.10@2.20
Union Platform, Striped..... $2.20@2.30
Chatillon's Grocers' Trip Scales 50%
Chatillon's Eureka. 25%
Chatillon's Favorite 40%
Family, Turnbulls ..... 30@30&10%
Riehle Bros.' Platform 40%

Scale Beams—

Scale Beams, List Jan. 12, '82...50&10@ 50&10&5%
Chatillon's No. 1 ..... 40%
Chatillon's No. 2 ..... 50%

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.) $0.50 ..... 30&10%
Box, 1 Handle ..... ₱ doz $4.00, 10%
Box, 2 Handle ..... ₱ doz $6.00, 10%
Defiance Box and Ship ..... 20&10%
Foot ..... 50&10@60%
Ship, Common .... ₱ doz $3.50 net
Ship, R. I. Tool Co. 10%

Screen Window and Door Frames—

Porter's Pat. Window and Door Frame. 33⅓&10%
Warner's Screen Corner Irons...33⅓@ 33⅓&10%
Stearns' Frames and Corners. 25@25&10%

Screw Drivers—

Douglas Mfg. Co. ..... 20&10&10%
Disston's ..... 45&10%
Disston's Pat. Excelsior ..... 45&10%
Buck Bros. 30%
Stanley R. & L. Co.'s Varnished Handles ..... 65&10% Black Handles. ..... 60&10%
Sargent & Co.'s No. 1 Forged Blade ..... 60&10&10% Nos. 20, 30 and 60 ..... 66⅔&10&10%
Knapp & Cowles' No. 1 ..... 60&20@70% No. 1 Extra ..... 60@60&10% Nos. 00 & 4 ..... 50&5@50&10&5%
Stearns' ..... 25&10&5%
Gay & Parsons 35%
Champion ..... 25&10%
Clark's Pat ..... 30@33⅓%
Crawford's Adjustable 30%
Ellrich's Socket and Ratchet ..25@25&10%
Allard's Spiral, new list 25%
Kolb's Common Sense ₱ doz $6.00, 25&10%
Syracuse Screw-Driver Bits ..... 30&30&5%
Screw Driver Bits ..... ₱ doz 50@75¢
Screw-Driver Bits, Parr's ..... ₱ gro $6.25
Fray's Hol. Hdle. Sets. No. 3, $12.00, 25@25&10%
P. D. & Co.'s all Steel 50%

Screws—

Wood Screws—List March 1, 1889

Flat Head Iron	50%
Round Head Iron....	40%
Flat Head Brass	45%
Round Head Brass...	35%
Flat Head Bronze....	45%
Round Head Bronze.	35%

Extra 5 @ 10 % often given

Machine—
Flat Head, Iron.....55%
Round Head, Iron.....50%

Bench and Hand—
Bench, Iron.....55&10@55&10&10%
Bench, Wood, Beech.....₱ doz $2.25
Bench, Wood, Hickory.....20&10%
Hand, Wood.....25&10@25&10&5%
Lag, Blunt Point.....75@75&10%
Coach and Lag, Gimlet Point.....75%
Bed.....25&5%
Hand Rail, Sargent's.....60%&10%
Hand Rail, H. & B. Mfg. Co...70&10@75%
Hand Rail, Am. Screw Co.....75%
Jack Screws, Millers Falls list..50@50&5%
Jack Screws, P. S. & W.....35%
Jack Screws, Sargent...60&10@60&10&5%
Jack Screws, Stearns'.....40@40&10%

Scroll Saws—
Lester, complete, $10.00.....25%
Rogers, complete, $4.00.....25%
Barnes' Builders' and Cabinet Makers', $15.....25%
Barnes' Scroll Saw Blades.....35%

Scythe Snaths.....50&2%

Shears—
American (Cast) Iron...75&10@75&10&5%
Pruning...See Pruing Hooks and Shears.
Barnard's Lamp Trimmers...₱ doz $3.75
Tinners'.....20&2%
Seymour's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's Tailor's Shears.....33⅓%
First quality C. S. Trimmers..80@80&10%
Second quality C. S. Trimmers. 80&10@80&10&10%
Acme Cast Shears.....10&10%
Diamond Cast Shears.....10%
Clipper.....10&10%
Victor Cast Shears.....75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel.....40%
Chicago Drop Forge & F. Co., Solid Steel Forged.....60%
Clauss Shear Co., Japanned.....70%
Clauss Shear Co., Nickeled, same list.60%

Sheaves—
Sliding Door—
M. W. Co., list July, 1888..50&10@60&5%
R. & E., list Dec. 18, 1885.....55&20%
Corbin's list.....60&10&2%
Patent Roller.....60&10&2%
Patent Roller, Hatfield's.....75%
Russell's Anti-Friction, list Dec. 18, 1885.....60&2%
Moore's Anti-Friction.....50%
Sliding Shutter—
R. & E. list Dec. 18, 1885.....60&10&2%
Sargent's list.....60&10%
Reading list.....60&10&10%

Ship Tools—
L. & I. J. White.....20&5%
Albertson Mfg. Co.....25%

Shoes, Horse, Mule, &c.—
Horse—
Burden's, Perkins', Phœnix, at factory. $4.00
Mule—
Add $1 ₱ keg to above prices.
Ox, Wrought—
Ton lots.....₱ ℔ 9¢
1000 ℔ lots.....₱ ℔ 9½¢
500 ℔ lots.....₱ ℔ 10¢

Shot—
(*Eastern prices 2¢ off, cash, 5 days.*
Drop, ₱ bag, 25 ℔.....$1.25
Drop, ₱ bag, 5 ℔.....30
Buck and Chilled, ₱ 25-℔ bag.....1.50
Buck and Chilled, ₱ 5-℔ bag.....35

Shovels and Spades—
Ames' Shovels, Spades, &c., list Nov. 1, 1885.....20%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron.....50&10%
Griffith's C. S.....60%60&10%
Griffith's Solid C. S. R. R. Goods.....20%
Old Colony (Sanford Fork & Tool Co).20%
St. Louis Shovel Co.....20@20&7½%
Hussey, Binns & Co.....15@25%
Hubbard & Co.....20@20&7½%
Lehigh Mfg. Co.....50&10%
Payne Fettebone & Son, list January, 1886.....30%
Remington's (Lowman's Pat.).30&10%@40%
Rowland's, Black Iron.....50&10%
Rowland's Steel.....60&5@60&10%

Shovels and Tongs—
Iron Head.....60&10@60&10&5%
Brass Head.....60&10&10%

Skeins, Thimble—
Western list.....75&5@75&10%
Columbus Wrt. Steel, list Nov. 1, 1887.20%
Coldbrookdale Iron Co.....50&10%
Utica P. S. T. Skeins.....60%
Utica Turned and Fitted.....35%

Sieves—
Buffalo Metallic, S. S. & Co...50&25&10%
Shaker (Barler's Pat.) Flour Sifters, ₱ doz $2.00; ₱ gr $21.00
Electric.....₱ gr $18.00
Hunter's.....₱ gr $21.00
Smith's Adjustable Sifters....₱ doz $2.00
Smith's Adjustable Milk Strainer. ₱ doz $2.00
Smith's Adjustable T. & C. Strainer. ₱ doz. $1.25

Sieves, Wooden Rim—

	Iron.	Plated.
Mesh 18, Nested, ₱ doz..	70¢	90¢
Mesh 20, Nested, ₱ doz..	85¢	$1.00
Mesh 24, Nested, ₱ doz..	$1.00	1.10

Slates—
School, by case.....40%

Snaps, Harness, &c.—
Anchor (T. & S. Mfg. Co.).....65%
Fitch's (Bristol).....50&10%
Hotchkiss.....10%
Andrews.....50%
Sargent's Patent Guarded.....70&10&10%
German, new list.....40&10%
Covert.....50&2%
Covert, New Patent.....50&5&2%
Covert, New R. E.....60%2%
Covered Spring.....60&10&10%

Soldering Irons—
Covert's Adjustable, list Jan. 1, 1886. 35&2%

Spoke Shaves—
Iron.....45%
Wood.....30%
Bailey's (Stanley R. & L. Co.).....40&10%
Stearns'.....20&10&30%

Spoke Trimmers—
Bonney's.....₱ doz $10.00, 50%
Stearns'.....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₱ doz. 55&10%
Douglas'.....₱ doz $9.00, 20%

Spoons and Forks—
Tinned Iron—
Basting, Cen. Stamp. Co.'s list...70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list.....70&10%
Buffalo S. S. & Co.....33⅓&2%
Silver-Plated—(4 mos. or 5% cash 30 days).
Meriden Brit. Co., Rogers.....50%
C. Rogers & Bros.....50%
Rogers & Bro.....50%
Reed & Barton.....50%
Wm. Rogers Mfg. Co.....50&10@60%
Simpson, Hall, Miller & Co.....50&10
Holmes & Edwards Silver Co.50&10&10%
L. Boardman & Son.....50&10%
Miscellaneous.
Holmes & Edwards Silver Co.:
No. 67 Mexican Silver.....50&10%
No. 50 Silver Metal.....50&10%
No. 24 German Silver.....50&10
No. 50 Nickel Silver.....50%
No. 49 Nickel Silver.....50&10
German Silver.....50@50&5
German Silver, Hall & Elton..50&5% cash
Nickel Silver.....50&5@50&10&5% cash
Britannia.....90%
Boardman's Nickel Silver.....50 } 10%
Boardman's Britannia Spoons, case lots.....60 } 10%

Springs—
Elliptic, Concord, Platform and Half Scroll.....60@60&5%
Cliff's Bolster Springs.....25%

Squares—
Steel and Iron.....} 75&10@80%
Nickel-Plated.....}
Try Square and T Bevels...60&10@60&10 &10%
Disston's Try Square and T Bevels.45&10%
Winterbottom's Try and Miter....30&10%
Starrett's Micrometer Caliper Squares. 25%
Avery's Flush Bevel Squares.....40%
Avery's Bevel Protractor.....50%

Standard Fibre Ware—

	Per Dozen. Plain.	Dec'r'd
Wash-Basins, 10½ in.....	$2.00	$2.25
Wash-Basins, 12 in.....	2.25	2.75
Keelers, 11¼ in.....		4.00
Cuspidors.....		8.00
Spittoons, "Daisy," 8 in....	4.00	4.50
Peck Measure.....	4.00	
Half-peck Measure.....	3.50	

See also Pails.

Staples—
Fence Staples, Galvanized. } Same price
Fence Staples, Plain..... } as B'rb Wire. See Trd.Rep.

Steelyards.....40&10&50%

Stocks and Dies—
Blacksmith's
Waterford Goods.....30&5&30&10%
Butterfield's Goods.....30&5&30&10%
Lightning Screw Plate.....25&30%
Reece's New Screw Plates....33⅓&5&40%

Stone—
Hindostan No. 1, 3¢; Axe, 3½¢; Slips No. 1, 4½¢
Sand Stone.....₱ ℔ 2½¢
Washita Stone, Extra.....₱ ℔ 19¢@20¢
Washita Stone, No. 1.....₱ ℔ 14¢@15¢
Washita Stone, No. 2.....₱ ℔ 10¢@11¢
Washita Slips, No. 1, Extra..₱ ℔ 36¢@38¢
Washita Slips, No. 1.....₱ ℔ 24¢@25¢
Arkansas Stone, No. 1, 4 to 6 in ₱ ℔ $1.50
Arkansas Stone, No. 1, 6 to 9 in ₱ ℔ $1.85
Turkey Oil Stone, 4 to 8 in.....₱ ℔ 40¢
Turkey Slips.....₱ ℔ $1.00@1.50
Lake Superior, Chase.....₱ ℔ 16¢
Lake Superior Slips, Chase..₱ ℔ 31¢@32¢
Seneca Stone, Red Paper Brand....₱ ℔ 18¢@20¢
Seneca Stone, High Rounds..₱ ℔ 20¢@25¢
Seneca Stone, Small Whets..₱ gro $24.00

Stove Polish—
Joseph Dixon's.....₱ gro $6.00,10%
Gem.....₱ gro $4.50, 10%
Gold Medal.....₱ gro $6.00, 25%
Mirror.....₱ pro $6.00, —%
Lustro.....₱ gro $4.75
Ruby.....₱ gro $3.75
Rising Sun, 5 gro lots.....₱ gro $5.50
Dixon's Plumbago.....₱ ℔ $5.00
Boynton's Noon Day..₱ gro.....13.00
Parlor Pride Stove Enamel..₱ gro 2 cans
Yates' Liquid, 2 3 5 10 gal....8¢
₱ gal ...$0.90 .80 .70 .60
Yates Standard Paste Polish, 10-℔ cans, ₱ ℔ 15¢
Jet Black.....₱ gro $3.50
Japanese.....₱ gro $3.50
Fireside.....₱ gro $2.50
Diamond Co. K. Enamel.....₱ gro $19.00
Bonnell's Liquid Stove Polish..₱ gro $9.00
Bonnell's Paste Stove Polish..₱ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ℔ cans.....12½¢
Black Jack Water Paste, 5 and 10 ℔ cans.....12½¢
Nickel Plate Paste.....₱ gro $6.00

Tacks, Brads, &c.—
List, Jan. 2, 1888.—(*Note.*—Some manufacturers are selling Tacks at slightly higher prices than those named):
American Iron Carpet.....80@80&5%
Steel Carpet.....80@80&5%
Swedes Iron Carpet.....80@80&5%
American Iron Cut.....75@75&10%
Swedes Iron.....75&5@75&10%
Swedes Iron, Upholsterers', 75&10@80%
Tinned Swedes Iron.....75&10@80%
Tinned Swedes Iron, Upholsterers', 75&10@80%
Gimp and Lace.....75&10@80%
Tinned Gimp and Lace.....75&10@80%
Swedes Iron Trimmers'.75&10@75&10&5%
Swedes Iron Miners'...75&10@75&10&5%
Swedes Iron Bill Posters' or Railroad, 75&10@75&10&5%
Swedes Steel (Swedes Iron price list), 80@80&5%
Copper Tacks.....50&10%
Copper Finishing, Trunk and Clout Nails.....50&10%
Finishing Nails.....70&10@70&10&5%
Trunk and Clout Nails..70&10@70&10&5%
Tinned Trunk and Clout Nails, 70&10@& 70&10&5%
Basket Nails'..70&10@70&10&5%
Common and Patent Brads, 70&10@70& 10&5%
Hungarian Nails.....70&10@70&10&5%
Chair Nails.....70&10@70&10&5%
Zinc Glaziers' Points.....50@50&5%
Cigar Box Nails.....50&10@50&10&5%
Picture-Frame Points...50&10@50&10&5%
Looking-Glass Tacks...50&10@50&10&5%
Leathered Carpet.....50&10@50&10&5%
Brush Tacks.....50&10@50&10&5%
Shoe Finders,' List Jan. 2, 1888, 10&10@& 10&10&5%
Lining and Saddle Nails, List Jan. 1, 1886:
Silvered.....30&10&10%
Japanned.....20&10&10%
Double-Pointed Tacks.....85%
Wire Carpet Nails.....50&10%
Wire Brads & Nails, see Nails, Wire.
Steel-Wire Brads, R. & E. Mfg. Co.'s list.....50&10%

Tap Borers—
Common and Rind.....20&10%
Ive's Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....20&10&30%
Clark's.....33⅓@35%

Tapes, Measuring—
American.....25&10%
Spring.....40%
Chesterman's, Regular list.....25@30%

Thermometers—
Tin Case.....80@80&10%

Thimble Skeins—See Skeins.

Ties, Bale—Steel
Standard Wire, list.....50&10&5%

Tinners' Shears, &c.—
Shears and Snips (P. S. & W.).....20@25%
Punches, see Punches.
Snips, J. Mallinson & Co.....33⅓%

Tinware—
Stamped, Japanned and Pl'ed, list Jan. 20 1887.....75@75&5

Tire Benders, Upsetters, &c—
Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%

Tobacco Cutters—
Champion.....20&10@30%
Wood Bottom.....₱ doz $5.00@$5.25
All Iron.....₱ doz $4.25
Nashua Lock Co'.s ₱ doz, $18.00 50@55%
Wilson's.....55%
Sargent's.....₱ doz, $24, 55&10%
Acme.....₱ doz, $20.00,40%

Transom Lifters—
Wollensak's:
Class 3 and 4, Bronzed Iron.....50%
Class 3 and 4, Bronze Metal.....25%
Class 3 and 4, Brass.....35%
Skylight Lifters.....35%
Crown, Eagle and Shield.....50%
Reiher's, list Jan. 1, 1887.
Bronzed Iron Rods.....50&10&2
Brass, Real Bronze or Nickel Plate..30%
Excelsior.....50&10&2%
Shaw's.....50&10%
Payson's Universal.....40@40&10%

Traps—
Game—
Newhouse.....35@40&5%
Oneida Fatterp.....70@70&5%
Game, Blake's Patent.....40&10&5%
Mouse and Rat—
Mouse Wood,Choker, ₱ doz holes, 11@12¢
Mouse, Round Wire.....₱ doz $1.50, 10%
Mouse, Cage, Wire.....₱ doz $2.50, 10%
Mouse, Catch-'em-alive....₱ dz $2.50, 15%
Mouse, Bonanza.....₱ gr $10.00
Mouse Delusion.....₱ gr $15.00
Rat, Decoy.....₱ gr $10.00, 10%
Ideal.....₱ gr $10.00
Cyclone.....₱ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₱ doz 90¢
In full cases.....₱ doz 75¢

Trowels—
Lothrop's Brick and Plastering.25@25&5%
Reed's Brick and Plastering.....15%
Disston's Br'k and Plastering, 25@25&10%
Peace's Plastering.....25%
Clement & Maynard's.....20%
Rose's Brick.....15&20%
Brade's Brick.....25%
Worrall's Brick and Plastering.....20%
Garden.....70%

Triers—
Butter and cheese.....25%

Trucks, Warehouse, &c.—
B. & L. Block Co.'s list, '82.....40%

Tubes, Boiler—
See Pipe.

Twine—

Flax Twine—	BC.	B.
No. 9, ¼ and ⅛ ℔ Balls.....	22¢	30¢
No. 12, ¼ and ⅛ ℔ Balls.....	21¢	29¢
No. 18, ¼ and ⅛ ℔ Balls.....	18¢	28¢
No. 24, ¼ and ⅛ ℔ Balls.....	18¢	28¢
No. 36, ¼ and ⅛ ℔ Balls.....	16¢	27¢

No. 264, Mattrass, ¼ and ⅛ ℔ Balls, 48@50¢
Chalk Line, Cotton, ⅛ ℔ Balls.....25¢
Mason Line, Linen, ⅛ ℔ Balls.....55¢
2-Ply Hemp, ¼ and ⅛ ℔ Balls (Spring Twine).....11½¢
3-Ply Hemp, 1 ℔ Balls.....12¢@12½¢
3-Ply Hemp, 1½ ℔ Balls.....11¢@11½¢
Cotton Wrapping, 5 Balls to ℔ ..15¢@16¢
2, 3, 4 and 5-Ply Jute, ½ ℔ Balls.....10¢
Wool.....6½¢@63½¢
Paper.....13¢@14¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz..18¢

Vises—
Solid Box.....60@60&5%
Parallel—
Fisher & Norris Double Screw.....15&10%
Stephens'.....25&30%
Parker's.....20@25%
Wilson's.....55%
Howard's.....40%
Bonney's.....40&10%
Millers Falls.....40&40&10%
Trenton.....40&5&40&10%
Merrill's.....15&20%
Sargent's.....60&10&10%
Backus and Union.....40%
Double Screw Leg.....15&10%
Prentiss.....20@25%
Simpson's Adjustable.....40%
Moore's.....20%
Saw Filers—
Bonney's, Nos. 2 & 3, $15.00.....40&10%
Stearn's.....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises.....33⅓@35%
Sargent's.....66⅔&10%
Hopkins'.....₱ doz $17.50, 10%
Reading.....40&10%
Wentworth.....20&10%
Combination Hand Vises.....₱ gr $42.00
Cowell Hand Vises.....20%
Bauer's Pipe Vises.....10%

Wagon Boxes—
Per ℔.....2½¢

Wagon Jacks—
Daisy.....25%

Washer Cutters—
Smith's Pat.....₱ doz $12.00, 20&10&10%
Johnson's.....₱ doz $11.00, 33⅓%
Penny's, ₱ doz Pol. $14; Jap'd, $16.00, 55%
Appleton's.....₱ doz $16.00, 60&10%
Bonney's.....30&10%

Washers—

Size.....	⅛	5-16	¾	½	⅝	¾	1
Washers....	6½	5½	4½	3½	3	3	3

In lots less than 200 ℔, ₱ ℔, add ¼¢, 5-℔ boxes 1¢ to list.

Wedges—
Iron.....₱ ℔ 3½¢
Steel.....₱ ℔ 4 ¢

Well Buckets, Galvanized—
Hill's.....₱ doz, 12 qt, $4.25; 14 qt, $5.25
Iron Clad.....₱ doz, 14 qt, $4.25@$4.50
Whiting's Flat Iron Band.....$4.25@4.50
Whiting's Wired Top..₱ doz $4.00@.4.25

Well Wheels—
8 in., $2.25; 10 in., $2.70; 12 in., $3.25

Wire—
Iron—
Market,
Br. & Ann., Nos. 0 to 18....70&10@75%
Cop'd, Nos. 0 to 18.....70@70&5%
Galv., Nos. 0 to 18.....25&5%
Tin'd, Tinned list Nos. 0 to 18.....67½%
Stone,
Br. and Ann'd, Nos. 16 to 18, 72½@ 72½&5%
Bright and Ann'd, Nos. 19 to 26, 75@ 75&5%
Br. and Ann'd, Nos. 27 to 36, 75@10&5%
Tinned.....70@70&10%
Tinned Broom Wire.....70&5@70&10%
Galvanized Fence.....65%
Annealed Fence, Nos. 8 and 9.....75%
Annealed Grape, Nos. 10 to 14.....75%
Brass, list Jan. 18, 1884.....15&20%
Copper, list Jan. 18, 1884.....30@35%
Barb Fence.....See Trade Report
Wire on Spools.....65%
Malin's Steel and Tin'd Wire on Spools, 40%
Malin's Brass and Cop. Wire on Spools 30%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to $, 30%
Steel Music Wire, Nos. 12 to 30..55¢ ₱ ℔
Picture Wire.....New list, 50%
Barb Wire Safety Guards, ₱ 1000, $9.00, 25%
Wire Clothes Lines, see Lines.

Wire Cloth, Netting, &c.
Painted Screen Cloth, good quality, ₱ 100 sq. ft., $1.80 @ $1.90
Galvanized Wire Netting.....75@75&5%

Wire Goods—
See Bright Wire Goods.

Wire Rope—
List May 1, 1886.
Iron.....30%
Cast Steel.....40%

Wrenches—
American Adjustable.....40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....40&10@50%
Coes' Genuine.....55&3%
Coes' "Mechanics'".....55&10&3%
Girard Standard.....70&10%
Machinists', Sterling Wrench Co..70&10%
Lamson & Sessions' Engineers'...60&10%
Lamson & Sessions' Standard.....70&10%
Goes' Pattern, Wrought.....
Girard Agricultural.....
Lamson & Sessions' Agric'l..... } 80%
Sterling Wrought.....
Bemis & Call's
Pat. Combination.....35%
Merrick's Pattern.....35%
Brigg's Pattern.....25%
Cylinder or Gas Pipe.....40&5%
No. 3 Pipe.....40&10%
Alken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₱ doz $4.00, 40%
Webster's Pat. Combination.....25%
Boardman's.....20&10%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....20&10%
Acme, Bright.....60&3%
Acme, Nickeled.....50&3%
Walker's.....55&3%
Diamond Steel.....55&3%

Wringers, Clothes—
List March 11, 1889, 2% cash.

Wrought Goods—
Staples, Hooks, &c, list Jan. 12, 1886, 80&2½@8.5&25%

CURRENT METAL PRICES.

JULY 3, 1889.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

IRON AND STEEL.

Bar Iron from Store.

Common Iron :	
⅜ to 2 in. round and square..	₱ lb 1.90 @ .. ¢
1 to 6 in. x ⅜ to 1 in.....	
Refined Iron :	
⅜ to 2 in. round and square..	
1 to 4 in. x ⅜ to 1½ in.....	₱ lb 2.00 @ 2.10¢
4½ to 6 in. x ⅜ to 1 in	
1 to 6 in. x ¼ and 5-16	₱ lb 2.20 @ 2.30¢
Rods—⅜ and 11-16 round and sq..	₱ lb 2.10 @ 2.20¢
Bands—1 to 6 x 3-16 to No. 12.....	₱ lb 2.20 @ 2.30¢
"Burden Best" Iron, base price..	₱ lb 3.00 @ ... ¢
Burden's "H. B. & S." Iron, base price.....	₱ lb 2 80 @ ....¢
"Ulster".....	₱ lb 3.00 @ ....¢
Norway Rods	4.00 @ 5.00¢

Merchant Steel from Store.

	Per pound.
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots.....	2½¢
Best Cast Steel, base price in small lots	8 ¢
Best Cast Steel Machinery, base price in small lots.....	5¢

Sheet Iron from Store.

	Common American.	R. G. Cleaned.
10 to 16.....₱ lb	2.75 @ 2.80¢	3.25 @ .....¢
17 to 20.....₱ lb	2.85 @ 3 00¢	3.25 @ 3.50 ¢
21 to 24.....₱ lb	3.00 @ 3.10¢	3.50 @ .....¢
25 and 26....₱ lb	3 20 @	3.50 @ .....¢
27..... ...₱ lb	3.35 @ 3.37½¢	3.75 @ .....¢
28.....₱ lb	3.50 @ .. ..¢	4.00 @ .....¢
	B. B.	2d qual.
Galv'd, 14 to 20, ₱ lb,	4.50 @	4.38 @ .....¢
Galv'd, 21 to 24, ₱ lb,	4.87½ @	4.75 @ .....¢
Galv'd, 25 to 26, ₱ lb,	5 25 @	5.12 @ .....¢
Galv'd, 27..... ₱ lb,	5.62½ @	5.48 @ .....¢
Galv'd, 28..... ₱ lb,	6.00 @	5.85 @ . ..¢
Patent Planished.....	₱ lb A 10¢	B, 9¢
Russia.....	₱ lb 9½¢ @ 10¢	
American Cold Rolled B. B.....	₱ lb 5¢ @ 7¢	
Craig Polished Sheet Steel.....	₱ lb, 8¢	

English Steel from Store.

Best Cast	₱ lb 15 ¢
Extra Cast	₱ lb 16½ @ 17 ¢
Swaged, Cast.....	₱ lb 16 ¢
Best Double Shear.....	₱ lb 15 ¢
Blister, 1st quality.....	₱ lb 12 ¢
German Steel, Best.....	₱ lb 10 ¢
2d quality.	₱ lb 9 ¢
3d quality	₱ lb 8 ¢
Sheet Cast Steel, 1st quality.....	₱ lb 15 ¢
2d quality.....	₱ lb 14 ¢
3d quality.....	₱ lb 12½¢

METALS.

Tin.

	Per lb
Banca, Pigs.....	23 ¢
Straits, Pigs.....	22 ¢
English, Pigs.....	24½¢
Straits in Bars...	23½¢

Tin Plates.

		Per box.
	Charcoal Plates.—Bright.	
Melyn Grade.....IC, 10 x 14..	$5.75 @	$6 00
" " ... .IC, 12 x 12.	6.00 @	6.25
" " .. IC, 14 x 20..	5.75 @	6.00
" " .....IC, 20 x 28..	12.00 @	12.50
" " ....IX, 10 x 14..	7.25 @	7.50
" " .. ..IX, 12 x 12..	7.50 @	7.75
" " ..... IX, 14 x 20..	7.25 @	7.50
" " .....IX, 20 x 28..	15.00 @	15 50
" " .....DC, 12½ x 17..	5 50 @	5.75
" " .....DX, 12½ x 17..	7.00 @	7.25
Call and Grade.....IC, 10 x 14..	5.75 @	6.00
" " .....IC, 12 x 12..	6.00 @	6 25
" " .....IC, 14 x 20..	5.75 @	6.00
" " .....IX, 10 x 14..	7.25 @	7.50
" " .....IX, 12 x 12..	7.50 @	7.75
" " .....IX 14 x 20.	7.25 @	7.50
Allaway Grade.....IC, 10 x 14..	5.00 @	5.12½
" " .....IC, 12 x 12..	5.12½ @	5.25
" " .....IC, 14 x 20..	5.00 @	5.12½
" " .....IC, 20 x 28..	11.00 @	....
" " .....IX. 10 x 14..	6.00 @	....
" " .....IX, 12 x 12..	6.25 @	....
" " ..... IX, 14 x 20..	6.00 @	...
" " .....IX, 20 x 28..	12.00 @	....
" " ...DC, 12½ x 17..	4.75 @	5.00
" " . .DX, 12½ x 17..	5.75 @	6.00
	Coke Plates.—Bright.	
Steel Coke.—IC, 10 x 14, 14 x 20..	$4.75 @	$5.00
10 x 20..	7.25 @	7.50
20 x 28..	9.75 @	10.25
IX, 10 x 14, 14 x 20..	5.50 @	5.75
BV Grade.—IC, 10 x 14, 14 x 20..	4.40 @	4.60
	Charcoal Plates.—Terne.	
Dean Grade.—IC, 14 x 20..	$4.35 @	$4.62½
20 x 28.....	8.75 @	9.25
IX, 14 x 20.....	5.40 @	5.62½
20 x 28.....	11.00 @	11.37½
Abecarne Grade.—IC, 14 x 20....	4.25 @	4.50
20 x 28....	8.45 @	9.00
IX, 14 x 20 ...	5.25 @	5.50
20 x 28...	10.50 @	10.80
	Tin Boiler Plates.	
IXX, 14 x 26.....112 sheets.....	$12.50 @	$12.75
IXX, 14 x 28..... 112 sheets....	12 75 @	
IXX, 14 x 31.....112 sheets	14.25 @	

Copper.

Duty: Pig, Bar and Ingot, 4¢; Old Copper, 3¢ ₱ lb. Manufactured (including all articles of which Copper is a component of chief value, 45 % ad valorem.

Ingot.	
Lake.....	@ 13½¢
"Anchor" Brand.....	@ 12½¢

Sheet and Bolt.

Prices adopted by the Association of Copper Manufacturers of the United States, May 23, 1889, being quotations for all sized lots.

Not wider than	Not longer than	And longer than	Weights per square foot and prices per pound. Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		20	20	20	21	22	23	26	28
30		72	20	20	20	21	23	25	29	....
36	96		20	20	20	22	24	28	30	....
36		96	20	20	21	23	25	29	31	....
48	96		20	20	22	24	26	30	....	....
48		96	20	20	23	25	27	31	....	....
60	96		20	20	25	27	32	....	....	....
60		96	20	21	26	....	....	....	....	....
84	96		21	22	....	....	....	....	....	....
84		96	22	23	....	....	....	....	....	....
Over 84 in. wide			23	25	....	....	....	....	....	....

All Bath Tub Sheets..... 16 oz. 14 oz. 12 oz. 10 oz
Per pound.... ... . $0.23 0,25 0,27 0 30

Bolt Copper, ¾ inch diameter and over, per pound..... ...30¢

Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles, over 60 inches diameter, up to 96 inches diameter, inclusive, 5 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles, over 96 inches diameter, 6 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Segment and Pattern Sheets, 3 cents per pound advance over price of sheets required to cut them from.

Cold or Hard Rolled Copper, 14 ounces per square foot and heavier, 1 cent per pound over the foregoing prices.

Cold or Hard Rolled Copper, lighter than 14 ounces per square foot, 2 cents per pound over the foregoing prices.

Copper Bottoms, Pits and Flats.

	Per pound.
14 ounce to square foot and heavier.....	23¢
12 ounce and up to 14 ounce to square foot.....	24¢
10 ounce and up to 12 ounce.....	26¢

Circles less than 8 inches diameter 2 cents per pound additional.

Circles over 13 inches diameter are not classed as Copper Bottoms.

Tinning.

Tinning sheets on one side, 10, 12 and 14 x 48 each.....	8¢
Tinning sheets on one side, 30 x 60 each	30¢
For tinning boiler sizes, 9 in (sheets 14 in. x 60 in.), each.	15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each	12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.) each.....	12¢
Tinning sheets on one side, other sizes, per square foot.....	2½¢
For tinning both sides double the above prices.	

Planished Brass and Copper.

14 x 48.

14 and 16 oz. and heavier..31¢.	By the case...30¢ ₱ lb
12 oz. and lighter.....33¢.	By the case...32¢ ₱ lb

24 x 48 and 30 x 60.

14 and 16 oz. and heavier..44¢.	12 oz.....37¢ ₱ lb

Seamless Brass and Copper Tubes.

O. G.	N. G.	⅜	½	⅝	¾	⅞	1	1½
8-14	6-12	35	31	28	27	26	25	22
15	13	36	31	29	28	27	26	23
16	14	37	32	30	29	28	27	23
17	15	38	33	31	30	29	28	24
18	16	40	34	32	30	29	28	25
19	17	41	35	33	32	31	30	27
20	18-19	42	37	35	34	33	32	29
21	20	44	39	37	36	35	34	32
22	21	46	40	38	37	36	35	34
23	22	48	42	40	39	38	37	37
24	23	51	44	42	41	39	38	39
25	24	54	47	44	43	42	41	43

Copper, Bronze and Gilding Tube, 2¢ ₱ lb additional.

Brazed Brass Tubing. (To No. 20, inclusive.)

Above 5-16 inch to 3 inch, inclusive	35¢
Plain, above 3 inch	45¢
Plain, 5-16 inch	45¢
Plain, ¼ inch	60¢
Plain, 3-16 inch	$1.00
Plain, ⅛ inch	1.50
Fancy Tubing, Brass, to No. 20, inclusive	43¢ ₱ lb
Bronze Tubing, 3¢ ₱ lb more than Brass.	
Discount from list	25 @ 30 %

Roll and Sheet Brass.

Discount from list. ..... 25 @ 30 %

High Brass Rods.

Over 1 inch diameter..	27¢
¼ inch to 1 inch diameter, both inclusive	24¢
No. 8 and less than ¼ inch diameter	26¢
Smaller than No. 8	30¢
Hexagon, Octagon and Square, 2¢ ₱ lb advance over Round Rods.	

Spelter.

Duty: Pig, Bars and Plates, $1.50 ₱ 100 lb.	
Western Spelter	5¼¢ @ 6¢
"Bergenport"	8¢
"Bertha"	7¾ @ 8¢

Zinc.

Duty; Sheet, 2½¢ ₱ lb.

600 lb casks.....	6½¢
Per lb	7½¢

Lead.

Duty: Pig, $2 ₱ 100 lb. Old Lead, 2¢ ₱ lb. Pipe and Sheets, 3¢ ₱ lb.

American	4½¢
Newark	4½¢
Bar.....	4½¢
Pipe, subject to trade discount....	6 ¢
Tin-Lined Pipe, subject to trade discount.....	15¢
Block Tin Pipes, subject to trade discount.....	45¢
Sheet, subject to trade discount.....	6¾¢

Solder.

½ @ ½ (Guaranteed)...	14½¢
Extra Wiping	13¢

The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

Antimony.

Cookson,...	₱ lb 16¢ @ 17¢
Hallett's	" 15¢ @ 16¢

Fittings.

Cast Iron Fittings, Black and Galvanized, Standard sizes.....	70&10
Cast Iron Fittings, Bushings and Plugs.....	75&10
Cast Iron Fittings, Flanges.....	70&10
Malleable Iron Bushings.....	75&10 %
Malleable Iron Unions.....	67½ %
Malleable Iron American Unions.....	55 %
Wrought-Iron Nipples....	70&10 %
Wrought-Iron Couplings.....	70 %
Wrought-Iron Long Screws.....	70 %
Casing Fittings.....	60 %
Malleable Iron Fittings.....	25 %

Valves, Cocks, &c.

Iron Body Valves.....	70 %
Throttle Valves, Iron Body.....	70 %
All-Iron Valves.....	65 %
Compression Gauge Cocks.....	60 %
Mississippi Gauge Cocks.....	60 %
Register Gauge Cocks.....	65 %
Air Cocks and Radiator Air Cocks.....	65 %
Steam Gauge Cocks.....	60 %
Oil Cups, Plain, Elbow, new pattern, T and Lever Handle.....	65 %
Globe Oil Cups.....	55 %
Common Lubricators.....	65 %
Lubricators with Air Cocks.....	65 %
Iron Body Lubricators.....	60 %
Steam Whistles.....	65 %
Whistle Valves	65 %
Water Gauges.....	65 %
Brass Expansion Joints.....	55 %
Pump Valves.....	55 %
Soldering Unions.....	65 %
Soldering Nipples.....	70 %
Brass Unions (Union Joints).....	65 %
Radiator Nipples.....	60 %
Fusible Plugs.....	60 %
Oil Pumps.....	55 %
Self-Acting Air Valves.....	65 %
Vacuum Valves.....	55 %
Steam Swing Joints.....	55 %
Iron Strainers.....	55&10 %
Jenkins' Iron Body Valves, except Gate Valves..	60&10 %
Jenkins' All-Iron Valves, except Gate Valves.....	60 %
Jenkins' Iron Body Gate Valves.....	55 %
Jenkins' All-Iron Gate Valves.....	55 %
Iron Cocks, all Iron.....	65 %
Iron Cocks, with Brass Plugs.....	65 %
Brass Globe, Angle and Cross Valves.....	65 %
Brass Globe Valves, Finished.....	45 %
Brass Globe and Angle Valves, hose outlet.....	65 %
Brass Garden Hose Valves.....	65 %
Brass Caps for Hose Valves.....	60 %
Brass Horizontal, Vertical and Angle Check Valves..	65 %
Brass Safety Valves.....	65 %
Brass Safety Valves, low pressure.....	65 %
Brass Safety Valves, low pressure, with balance weight.....	65 %
Brass Butterfly Valves.....	55 %
Brass Throttle Valves.....	55 %
Brass Radiator Valves.....	65 %
Brass Radiator Valves, Jenkins'.....	65 %
Brass Jenkins' Globe, Angle, Cross, Corner, Safety and Check Valves.....	65 %
Brass Jenkins' Gate Valves.....	50 %
Brass Steam Cocks.....	60 %
Brass Gas, Meter and Union Meter Cocks.....	60 %
Brass Fittings, Rough.....	60 %
Brass Fittings, Finished.....	25 %
Brass Bushings.....	60 %

Plumbers' Brass Work.

Ground Key Work, Rough.....	60 %
Ground Key Work, Finished.....	55 %
Compression Work.....	60 %
Compression Work, Grundy, Heavy Pattern.....	55 %
Chain Stays.....	60 %
Iron Boiler Couplings, Ground Face, per set $1.....	net
Basin Plugs.....	60 %
Sink or Bath and Wash Tray Plugs.....	60 %
Basin Clamps.....	55 %

FRENCH GLASS.

Per Box 50 feet.

Sizes		Single. 1st.	2d.	3d.	4th.
		E F H	I E H	H H	H B
25	6 x 8 to 10 x 15.....	$10.50	$9.00	$8.50	$8.00
40	11 x 14 to 16 x 24	11.50	10.75	10.25	9.75
50	18 x 22 to 20 x 30.....	15.50	14.00	13.00	12.50
54	15 x 36 to 24 x 30.....	16.50	15.00	13.50	.....
60	20 x 28 to 24 x 36.....	17.75	16.25	14.75	.....
70	26 x 36 to 26 x 44.....	19.00	17.50	15.25	.....
80	26 x 46 to 20 x 50.....	21.00	19.50	17.00	.....
84	30 x 52 to 30 x 54.....	22.00	20.25	18.00	.....
90	30 x 56 to 34 x 56.....	23.00	21.25	19.00	.....
94	34 x 58 to 34 x 60.....	24.00	22.75	21.00	.....
100	36 x 60 to 40 x 60.....	26.50	24.50	23.00	.....